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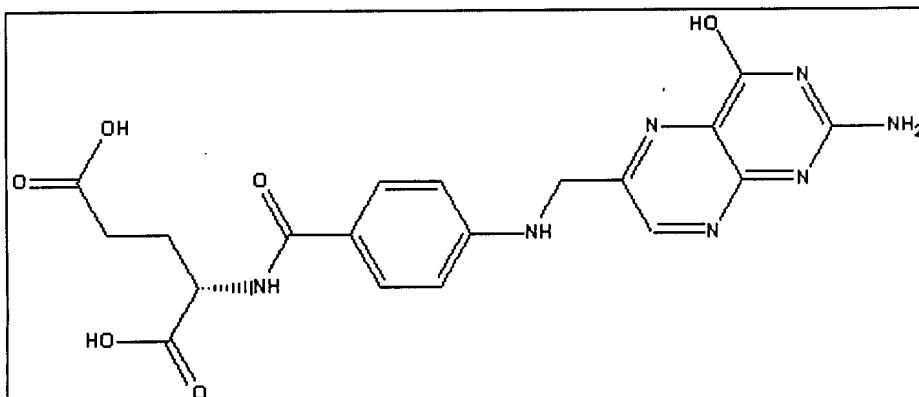
Enter a chemical name, CAS Number, molecular formula, or molecular weight

Or choose: [Substructure Query with Plug-In](#) or [Structure Query with Java](#)**Just**

## Folic acid [59-30-3]

**Synonyms:** Vitamin M; Pteroylglutamic Acid; folacin; folcysteine; N-(p-(((2-amino-4-hydroxy-6-pteridinyl)methyl)amino)benzoyl)-L-glutamic acid; N-(4-(((2-amino-1,4-dihydro-4-oxo-6-pteridinyl)methyl)amino)benzoyl)-L-glutamic acid; L-pteroylglutamic acid; pteglu; 2-amino-6-((p-((1,3-dicarboxypropyl)carbamoyl)anilino)methyl)-4-pteridinol; pteroyl-L-glutamic acid; pteroylmonoglutamic acid; pteroyl-L-monoglutamic acid; Vitamin B11; Vitamin BC; PGA; liver lactobacillus casei factor; cytofol; foliamin; folipac; folsaure; foluite; incafolic; millafol; folettes; acifolic; folsav; folacid; Vitamin B; folbal;

$C_{19}H_{19}N_7O_6$   
441.4024



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09/551, 405

FILE 'REGISTRY' ENTERED AT 13:05:55 ON 07 NOV 2000  
=> s c20h25n7o6

L1 74 C20H25N7O6

=> s 5-methyl/cns

3229144 5/CNS  
4703475 METHYL/CNS  
L2 281164 5-METHYL/CNS  
((5(W)METHYL)/CNS)

=> s 11 and 12

L3 44 L1 AND L2

=> s 2-amino/cns and 4-hydroxy/cns

8430573 2/CNS  
1895456 AMINO/CNS  
181444 2-AMINO/CNS  
((2(W)AMINO)/CNS)  
6216541 4/CNS  
1330512 HYDROXY/CNS  
225667 4-HYDROXY/CNS  
((4(W)HYDROXY)/CNS)  
L4 2657 2-AMINO/CNS AND 4-HYDROXY/CNS

=> s 14 and 13

L5 11 L4 AND L3

=> s L-Glutamic acid/cns

868829 L/CNS  
39551 GLUTAMIC/CNS  
4709356 ACID/CNS  
L6 31484 L-GLUTAMIC ACID/CNS  
((L(W)GLUTAMIC(W)ACID)/CNS)

=> s 2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pterid?/cns

8430573 2/CNS  
1895456 AMINO/CNS  
4422 1,4,5,6,7,8/CNS  
317083 HEXAHYDRO/CNS  
3229144 5/CNS  
4703475 METHYL/CNS  
6216541 4/CNS  
1462899 OXO/CNS  
2176424 6/CNS  
19070 PTERID?/CNS  
L7 86 2-AMINO-1,4,5,6,7,8-HEXAHYDRO-5-METHYL-4-OXO-6-PTERID?/CNS  
((2(W)AMINO(W)1,4,5,6,7,8(W)HEXAHYDRO(W)5(W)METHYL(W)4(W)OXO(W  
6(W)PTERID?)/CNS)

=> s 16 and 17

L8 67 L6 AND L7

=> s 18 and 7/n

166612 7/N

L9 44 L8 AND 7/N

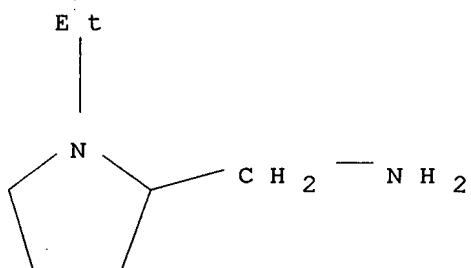
=> d scan

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[[2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, compd. with 1-ethyl-2-pyrrolidinemethanamine (1:1) (9CI)

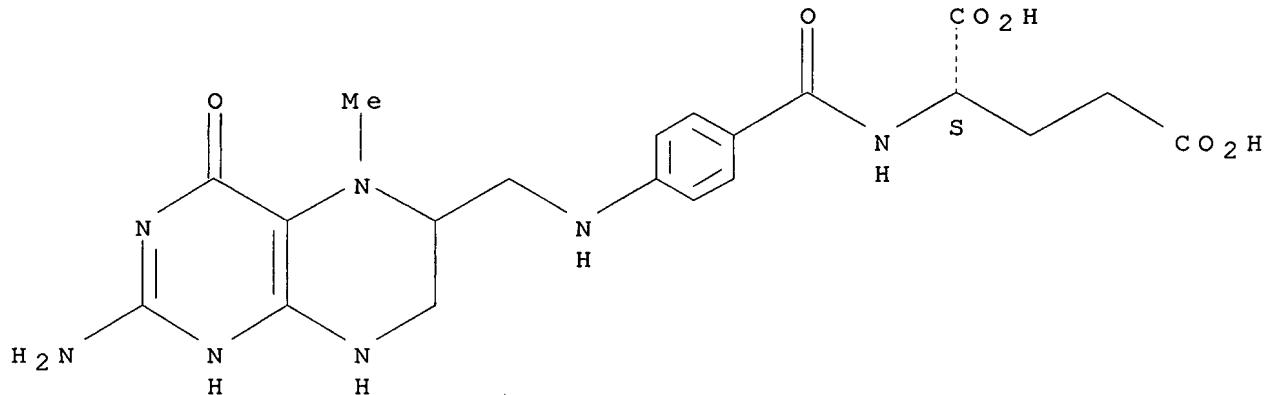
MF C20 H25 N7 O6 . C7 H16 N2

CM 1



CM 2

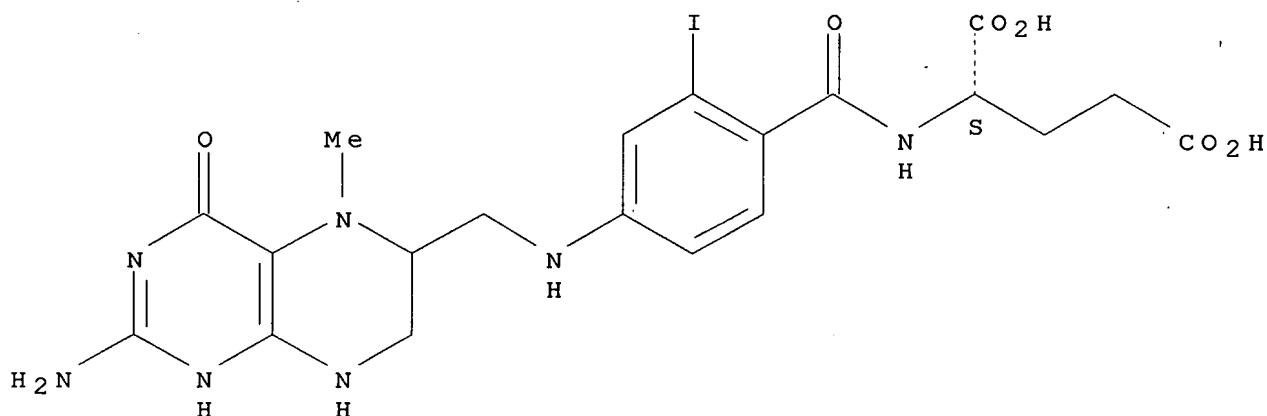
Absolute stereochemistry.



HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):43

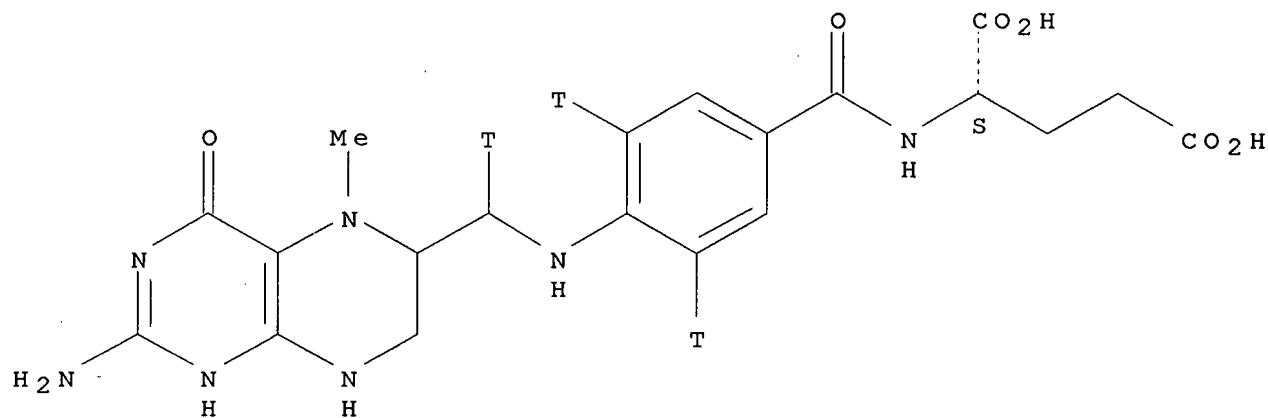
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]-2-iodobenzoyl]- (9CI)  
MF C20 H24 I N7 O6

Absolute stereochemistry.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl-t]amino]benzoyl-3,5-t2]- (9CI)  
MF C20 H22 N7 O6 T3

Absolute stereochemistry.

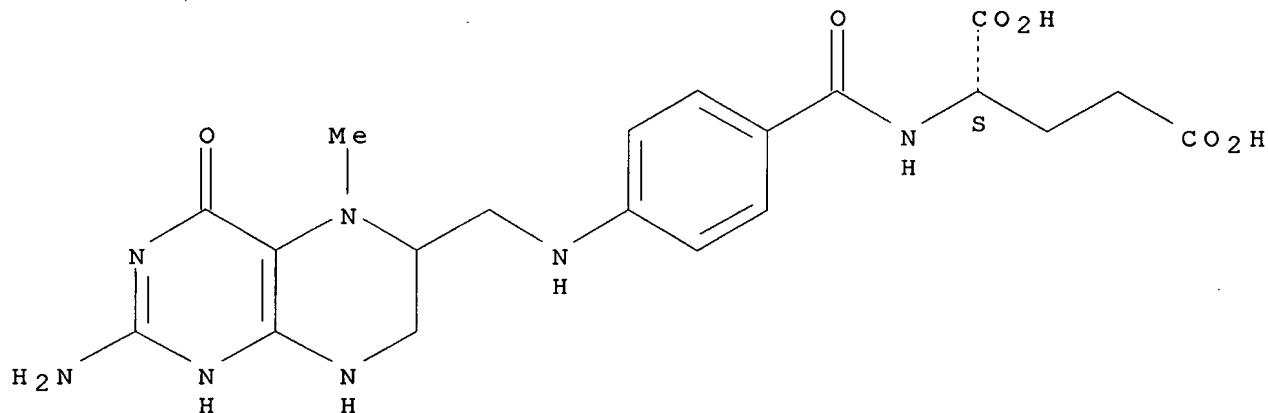


L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, monopotassium salt (9CI)

MF C20 H25 N7 O6 . K

Absolute stereochemistry.



● K

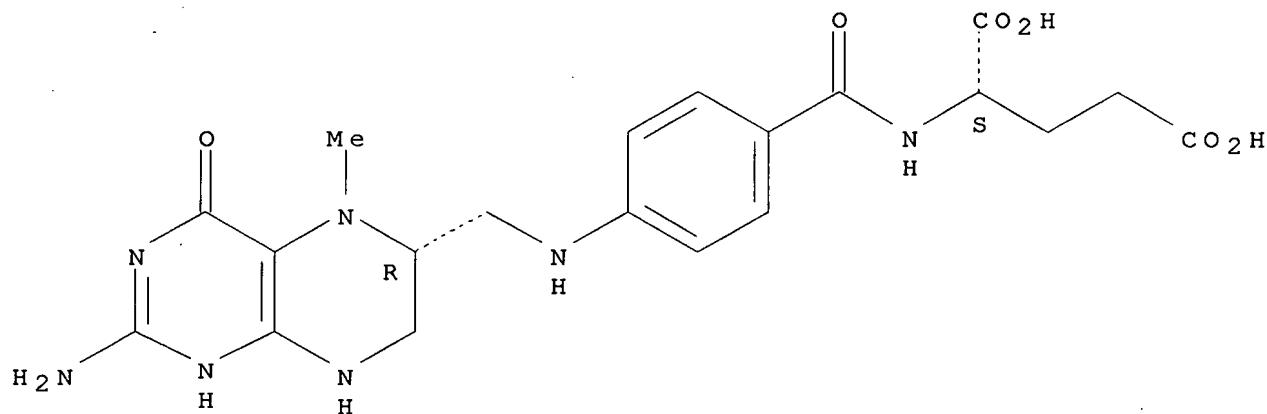
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, (R)-, compd. with cyclohexanamine (9CI)

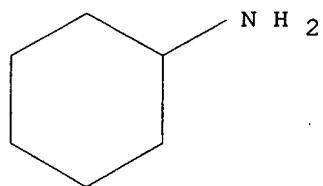
MF C20 H25 N7 O6 . x C6 H13 N

CM 1

Absolute stereochemistry.

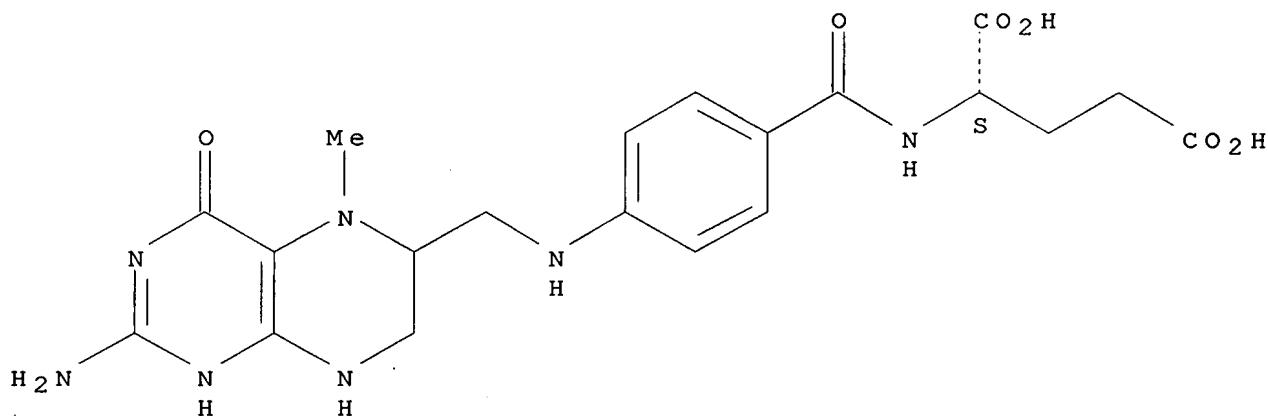


CM 2



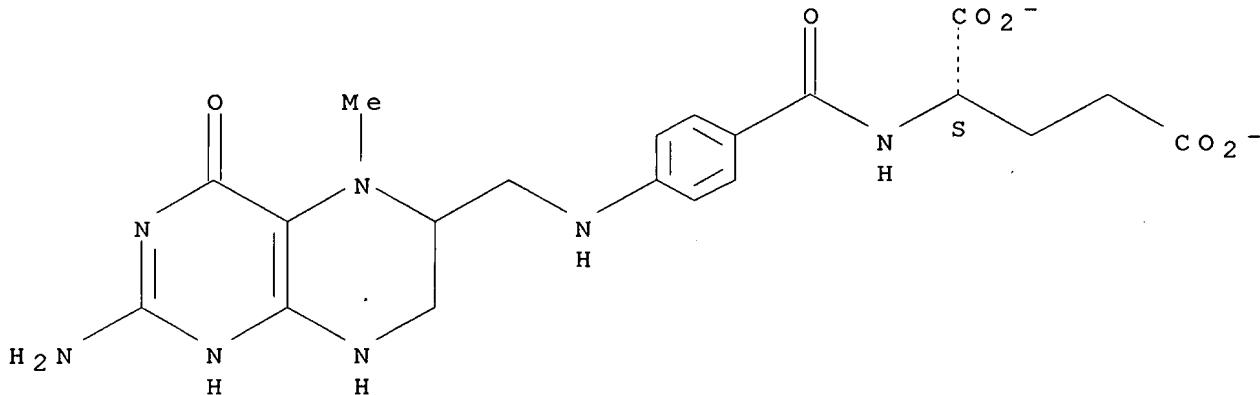
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, labeled with tritium (9CI)  
MF C20 H25 N7 O6

Absolute stereochemistry.

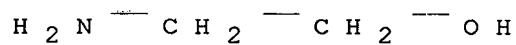


L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, ion(2-) (9CI)  
 MF C20 H23 N7 O6

Absolute stereochemistry.

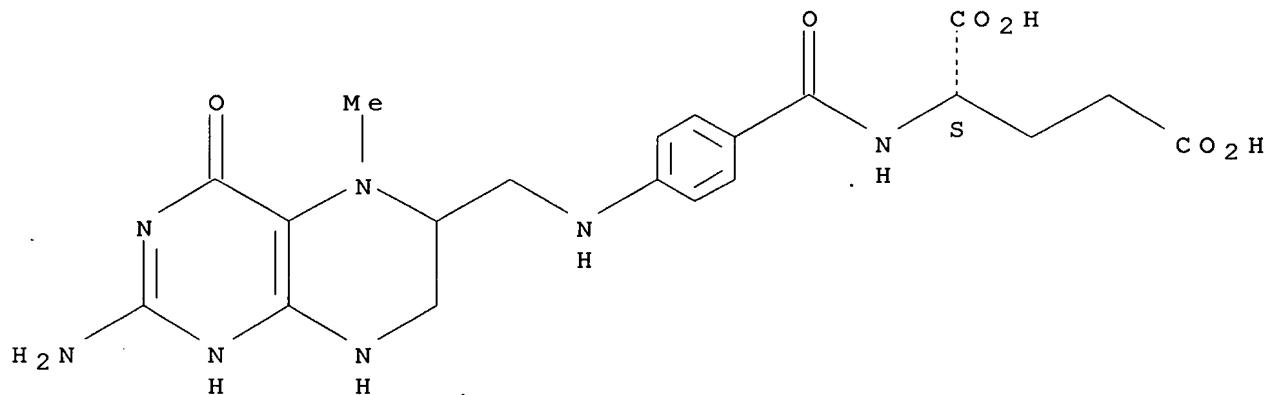


L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, compd. with 2-aminoethanol (9CI)  
 MF C20 H25 N7 O6 . x C2 H7 N O



CM 2

Absolute stereochemistry.

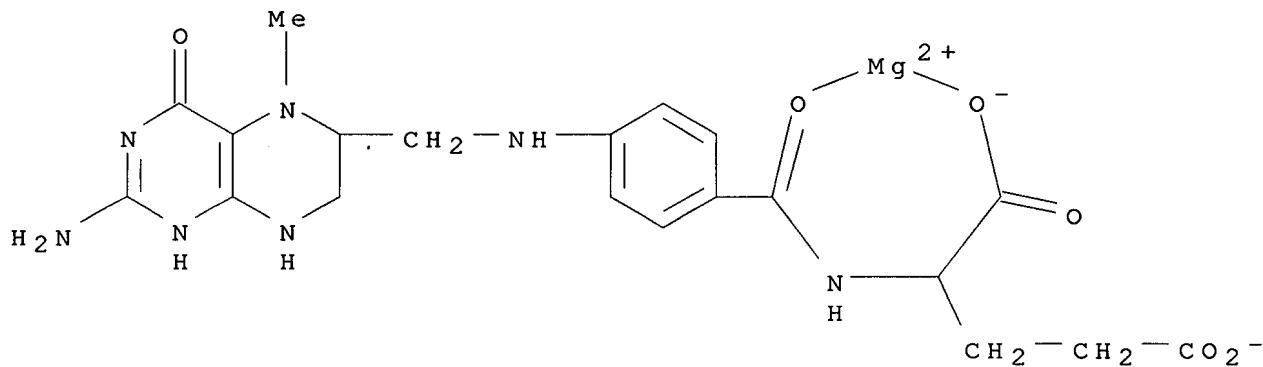


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IN Magnesium, [N-[4-[[[2-amino-3,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-L-glutamato(2-)]- (9CI)

MF C20 H23 Mg N7 O6

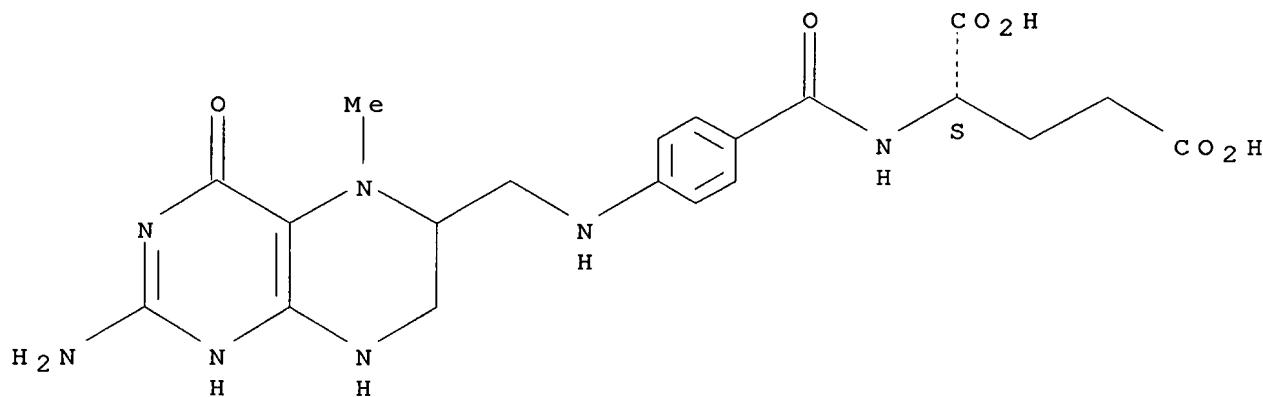
CI CCS, COM



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, compd. with L-arginine (1:2) (9CI)  
MF C20 H25 N7 O6 . 2 C6 H14 N4 O2

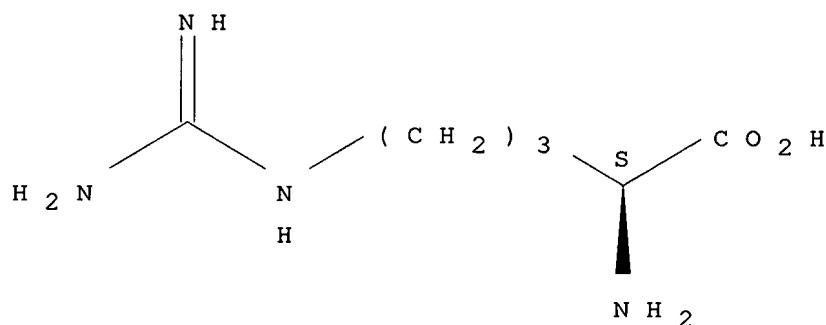
CM 1

Absolute stereochemistry.



CM 2

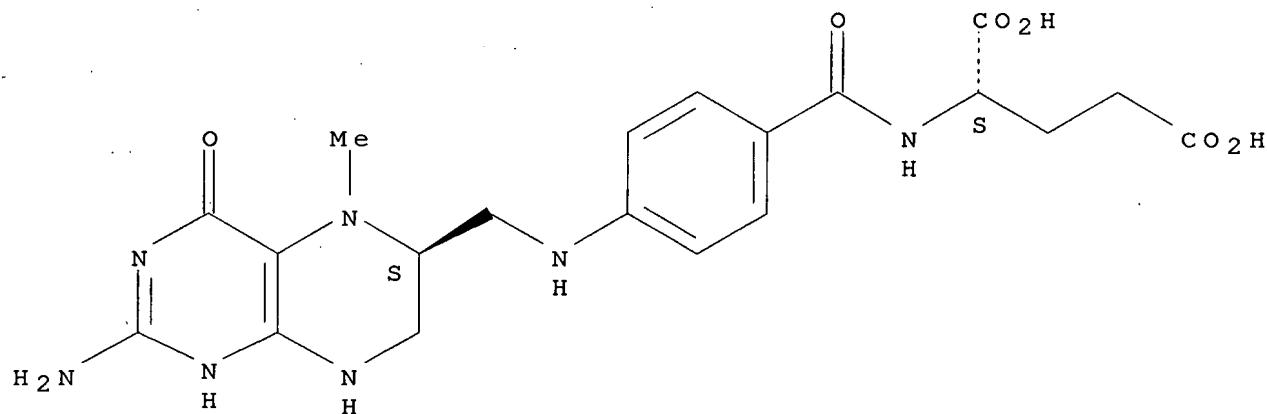
Absolute stereochemistry.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, (S)-, compd. with  
(R)-1-ethyl-2-pyrrolidinemethanamine (1:1) (9CI)  
MF C20 H25 N7 O6 . C7 H16 N2

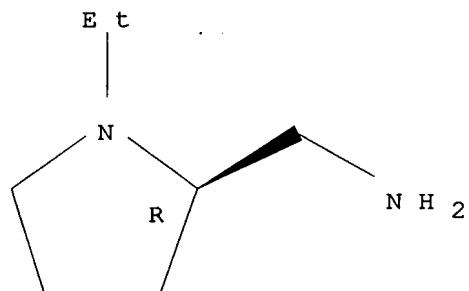
CM 1

Absolute stereochemistry.



CM 2

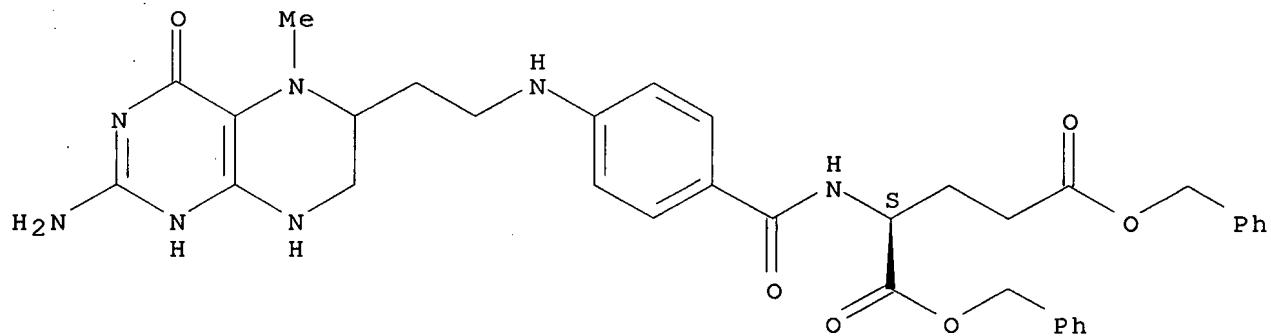
Absolute stereochemistry.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)ethyl]amino]benzoyl]-, bis(phenylmethyl) ester (9CI)  
 MF C35 H39 N7 O6

Absolute stereochemistry.

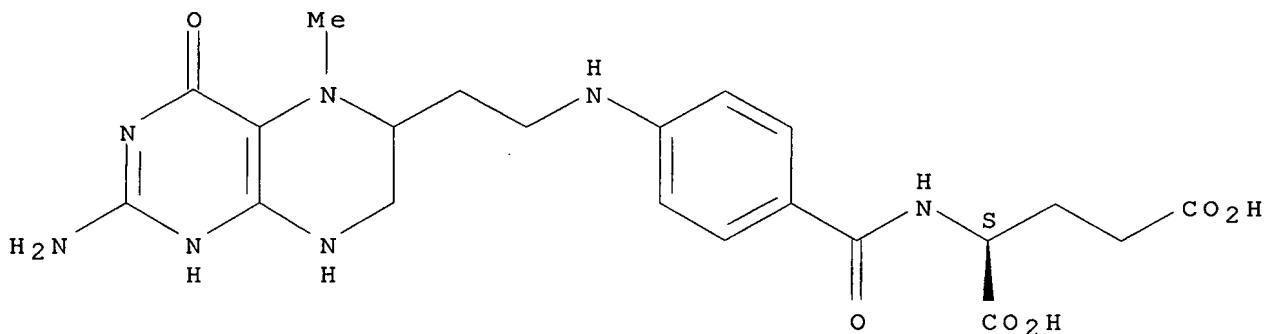


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IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)ethyl]amino]benzoyl]-, disodium salt (9CI)

MF C<sub>21</sub> H<sub>27</sub> N<sub>7</sub> O<sub>6</sub> . 2 Na

Absolute stereochemistry.

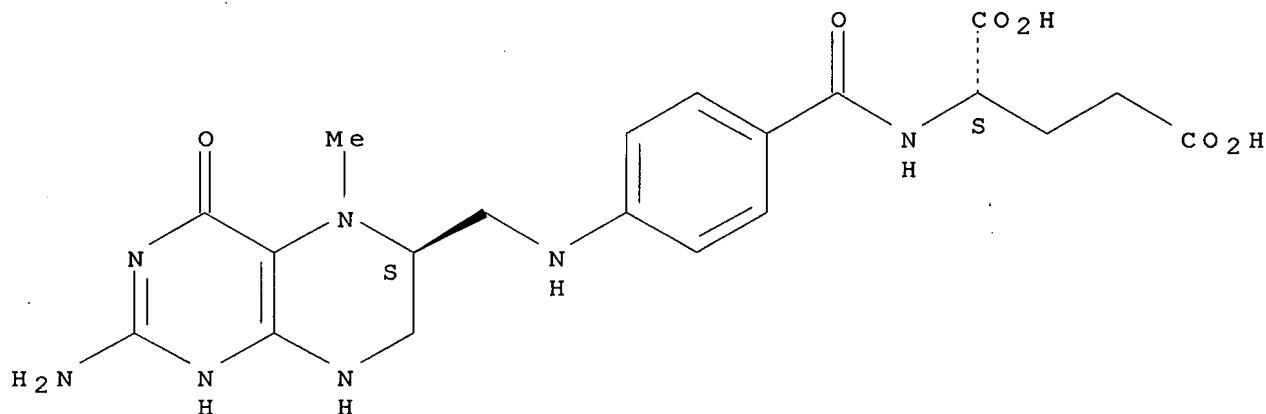


● 2 Na

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IN L-Glutamic acid, N-[4-[[[(6S)-2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]-, sodium salt (9CI)  
MF C20 H25 N7 O6 . x Na

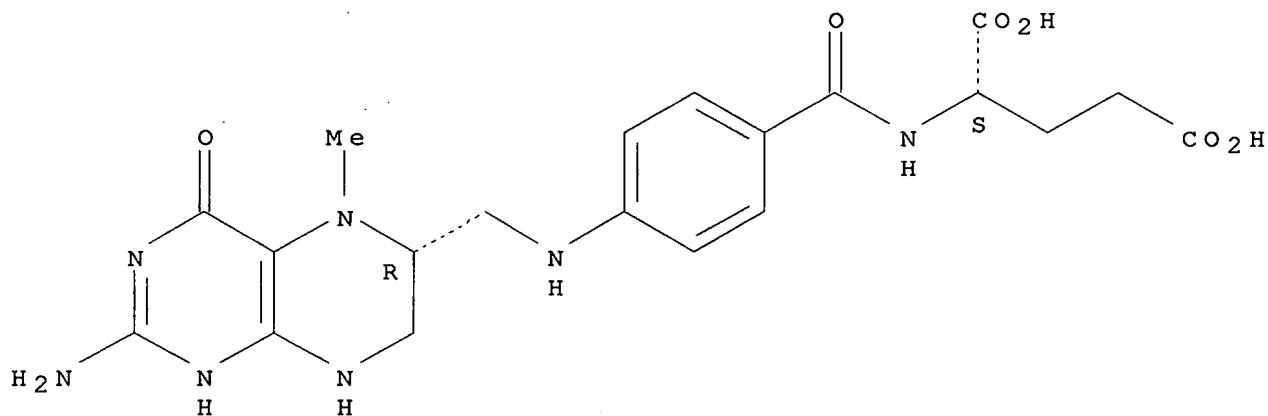
Absolute stereochemistry.



● x Na

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[[2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]-, calcium salt, (R)- (9CI)  
MF C20 H25 N7 O6 . x Ca

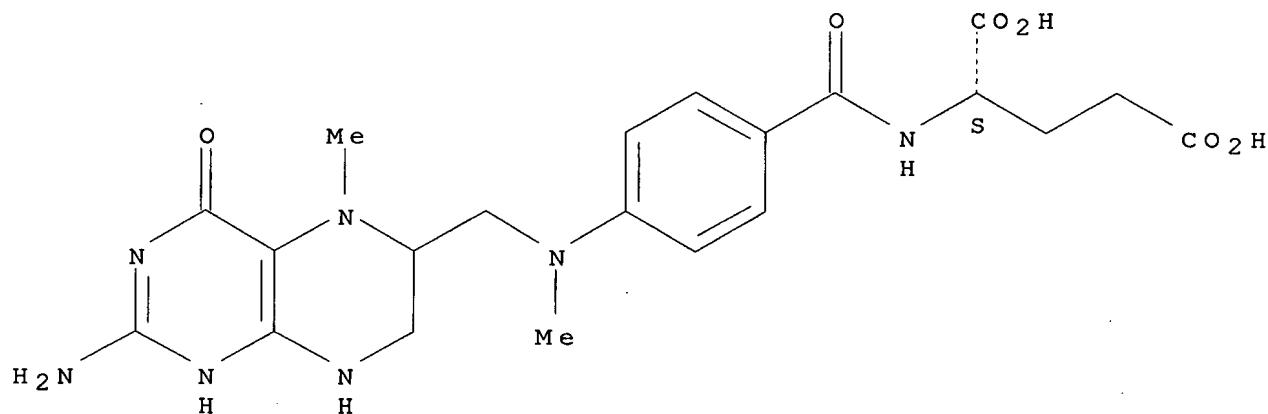
Absolute stereochemistry.



● x Ca

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[[[2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]methylamino]benzoyl]-, calcium salt (1:1) (9CI)  
MF C21 H27 N7 O6 . Ca

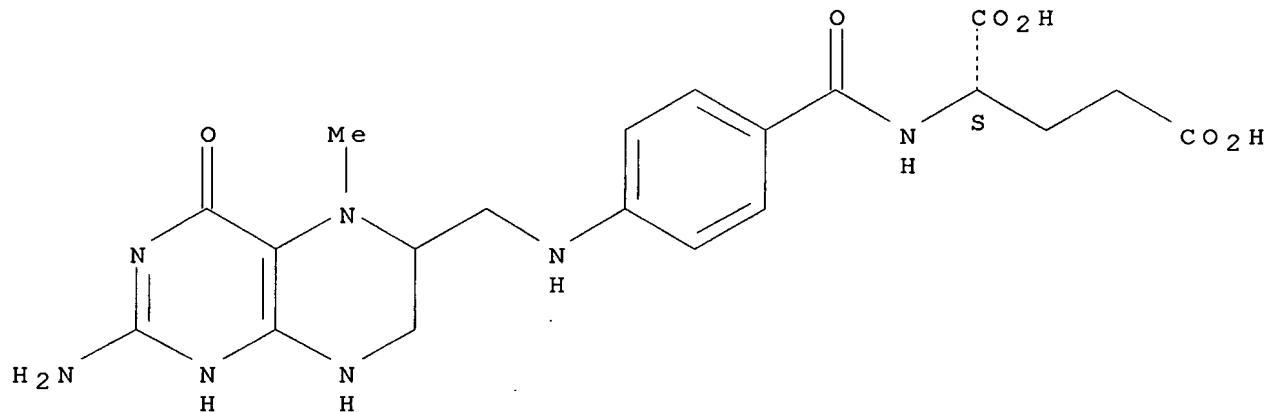
Absolute stereochemistry.



● Ca

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt (1:1) (9CI)  
MF C20 H25 N7 O6 . Ca

Absolute stereochemistry.

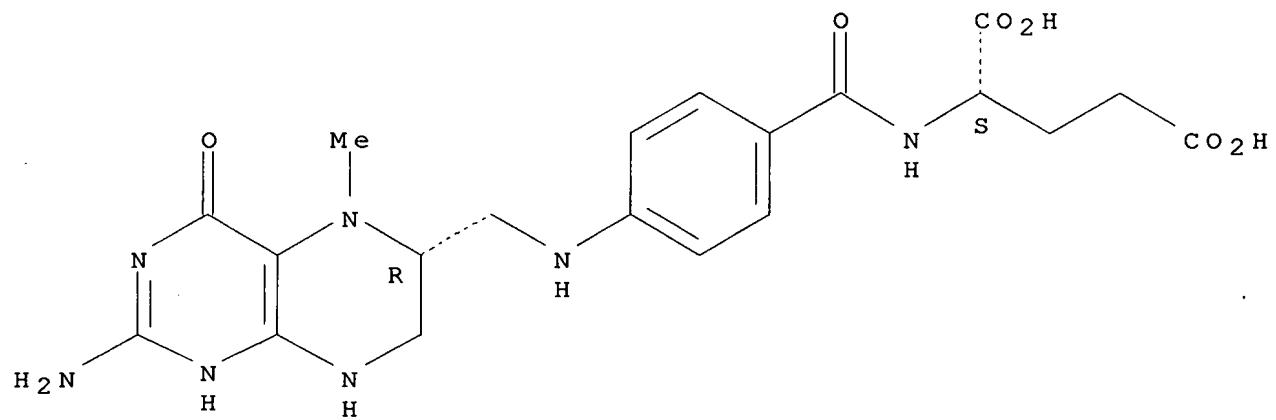


● Ca

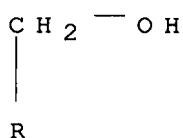
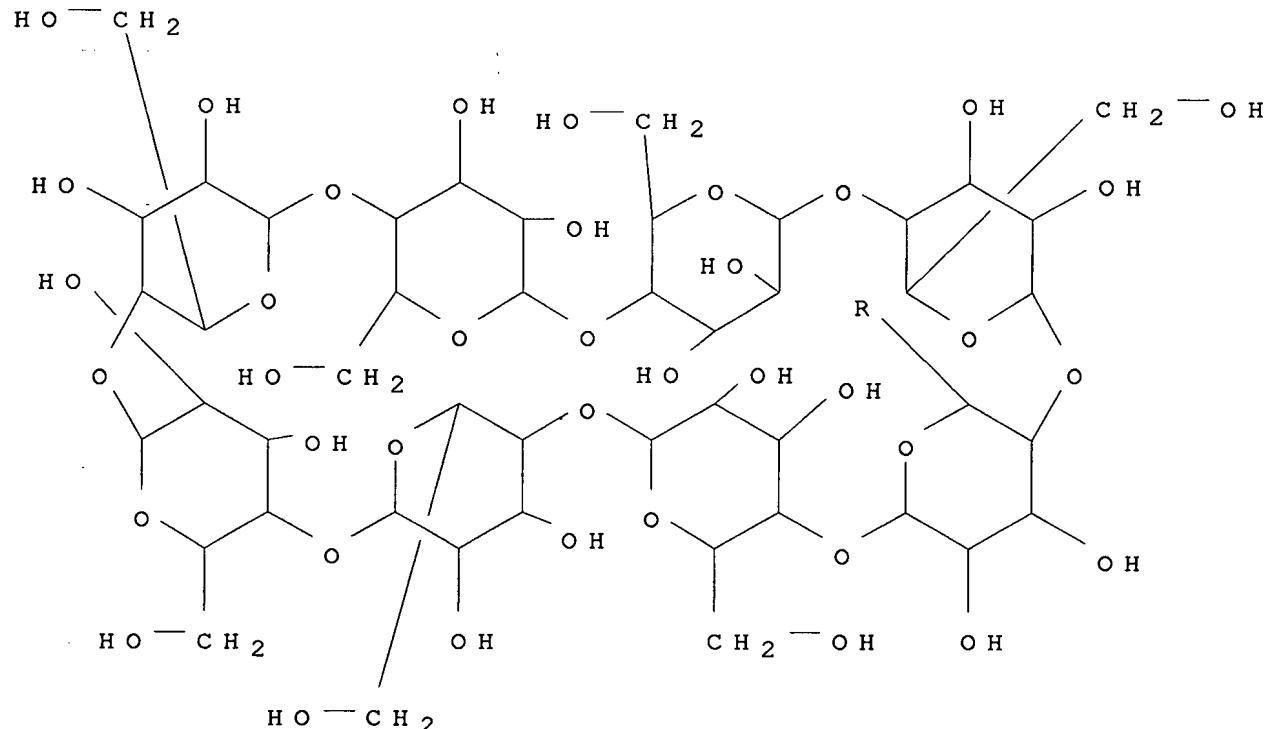
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, (R)-, compd. with  
.gamma.-cyclodextrin (1:1) (9CI)  
MF C48 H80 O40 . C20 H25 N7 O6

CM 1

Absolute stereochemistry.

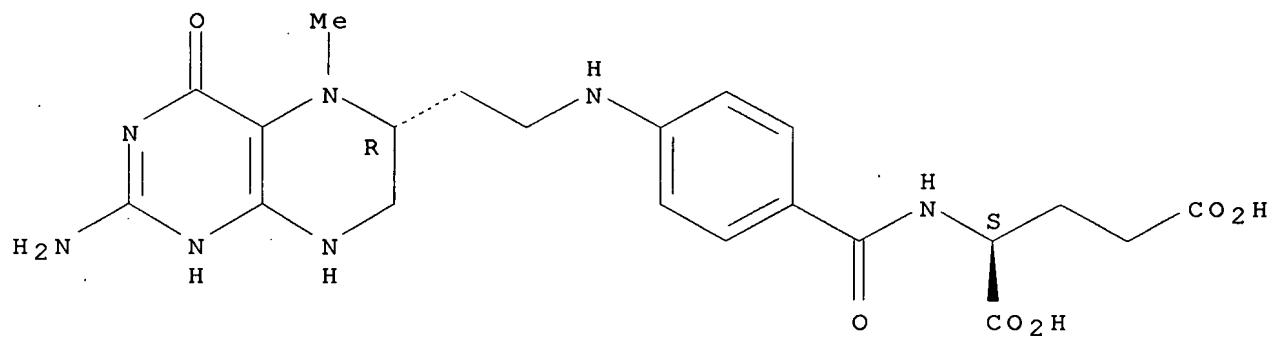


CM 2



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-  
oxo-6-pteridinyl)ethyl]amino]benzoyl]-, (R)- (9CI)  
MF C21 H27 N7 O6

### Absolute stereochemistry.

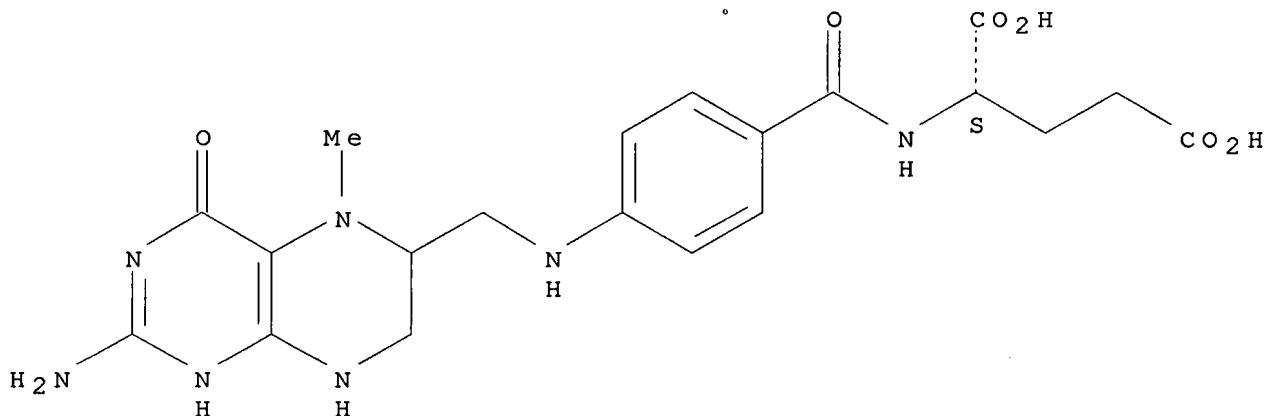


L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl], sodium salt (9CI)

MF C20 H25 N7 O6 . x Na

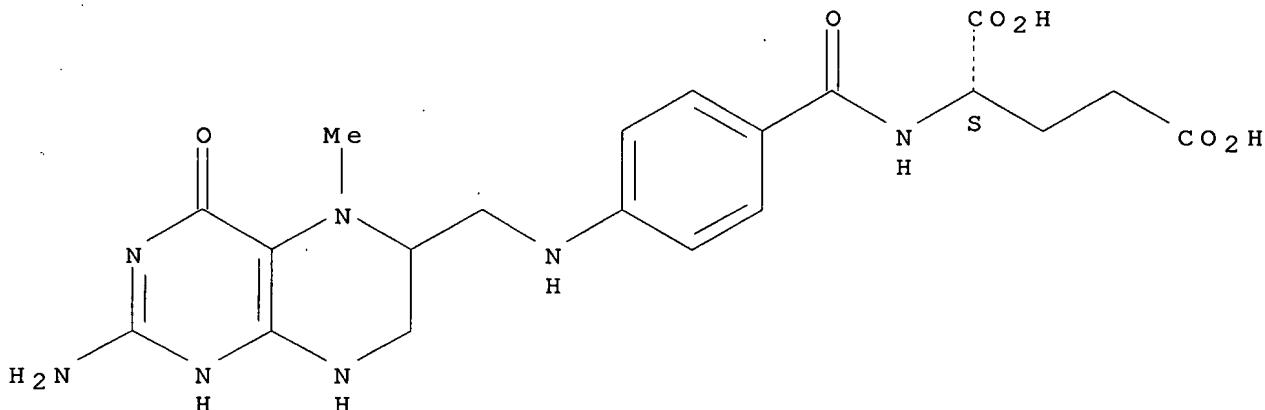
Absolute stereochemistry.



● x Na

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, magnesium salt (1:1) (9CI)  
MF C20 H25 N7 O6 . Mg

Absolute stereochemistry.

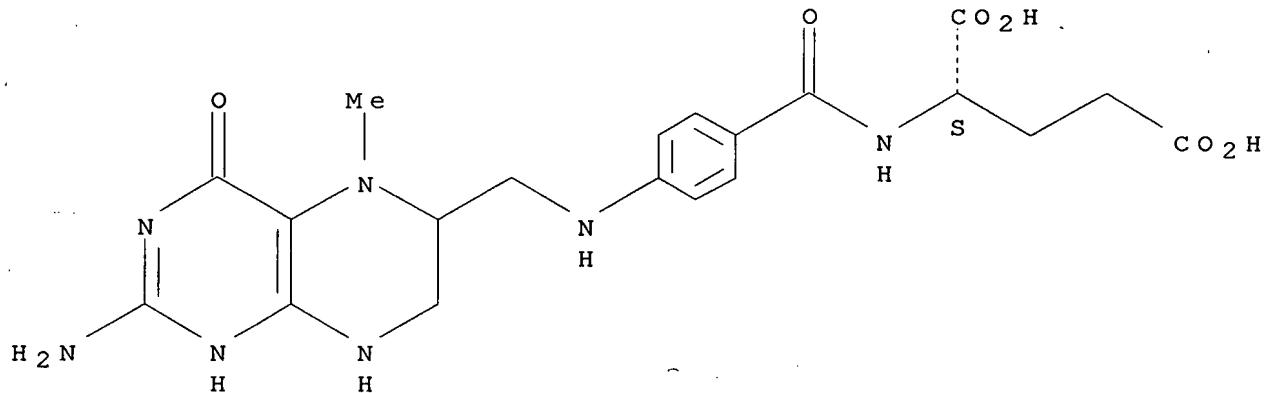


● Mg

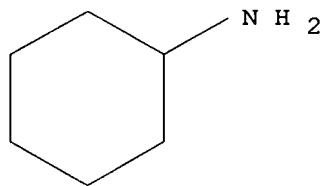
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, compd. with cyclohexanamine (9CI)  
MF C20 H25 N7 O6 . x C6 H13 N

CM 1

Absolute stereochemistry.

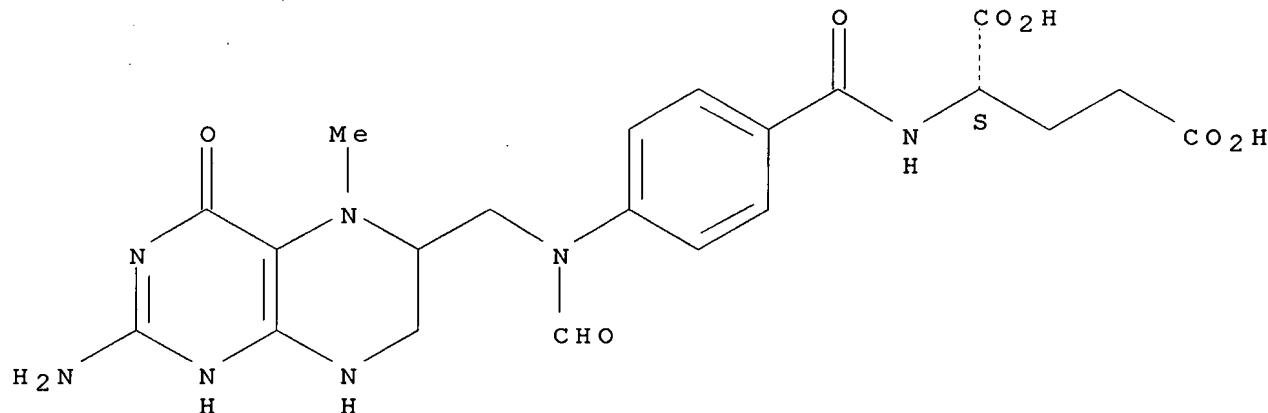


CM 2



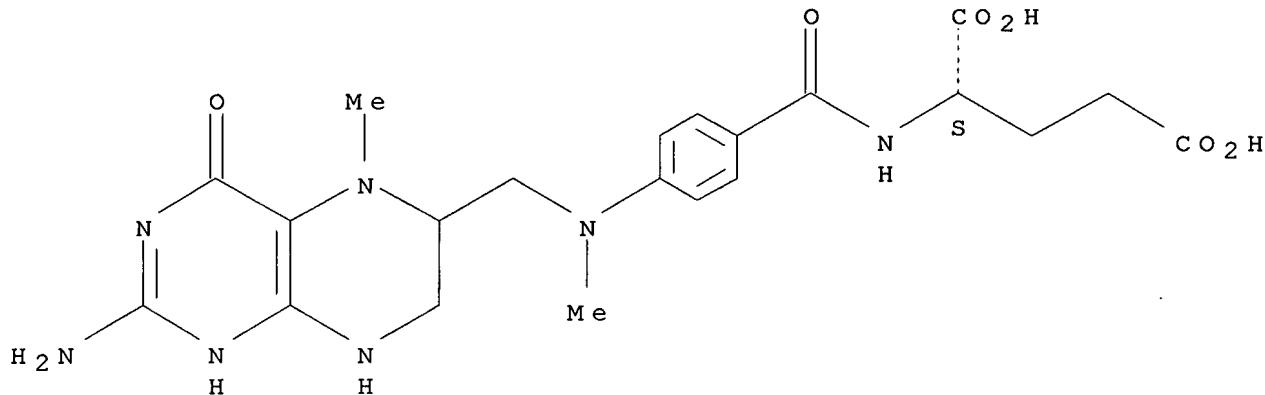
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]formylamino]benzoyl]- (9CI)  
MF C21 H25 N7 O7

Absolute stereochemistry.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]methylamino]benzoyl]- (9CI)  
 MF C21 H27 N7 O6  
 CI COM

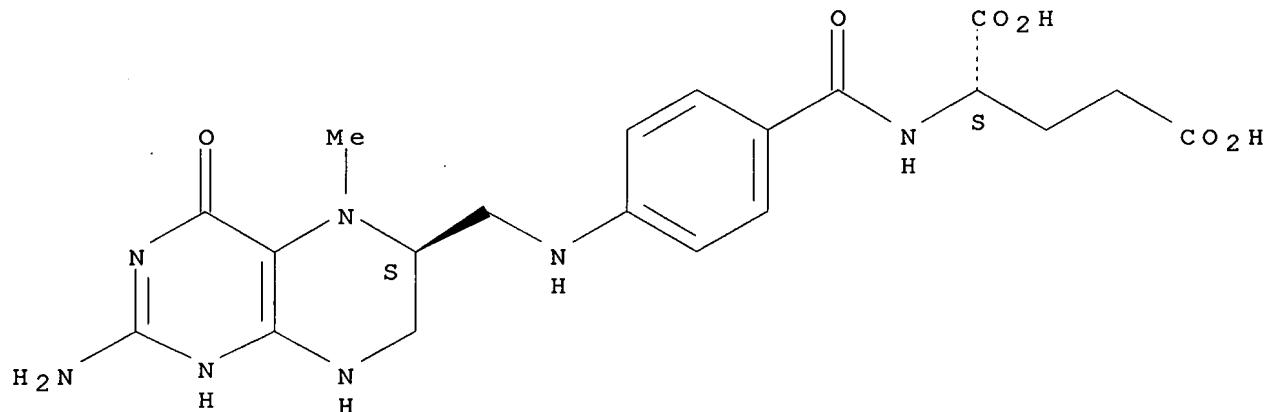
Absolute stereochemistry.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, (S)-, compd. with  
 N-(1-methylethyl)-2-propanamine (9CI)  
 MF C20 H25 N7 O6 . x C6 H15 N

CM 1

Absolute stereochemistry.



CM 2

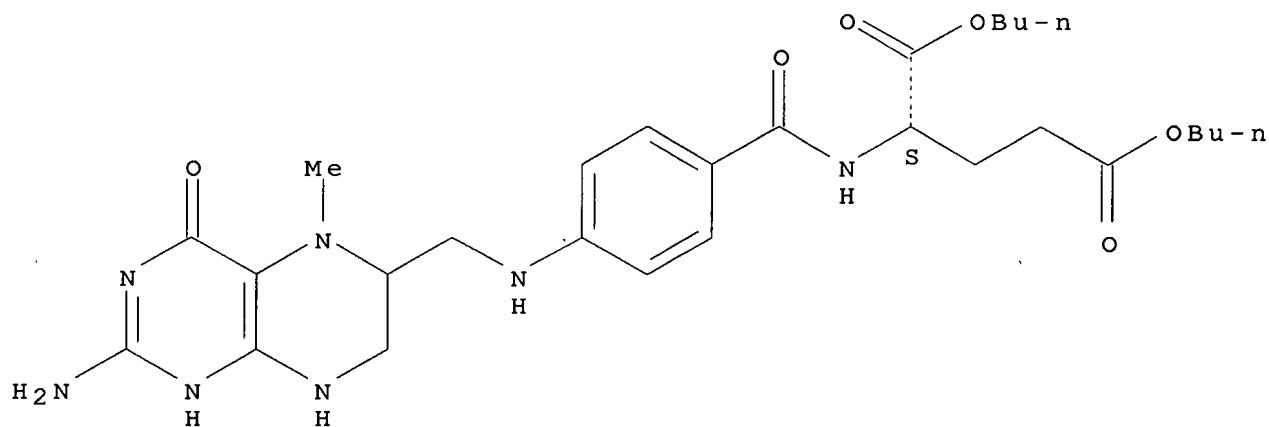
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IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, dibutyl ester (9CI)

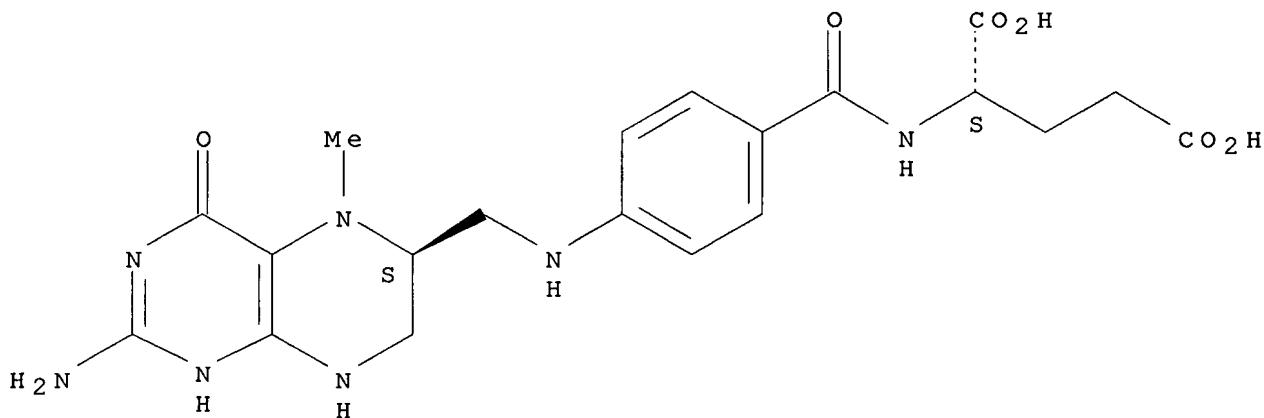
MF C28 H41 N7 O6

Absolute stereochemistry.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[[[(6S)-2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]- (9CI)  
 MF C20 H25 N7 O6  
 CI COM

Absolute stereochemistry.

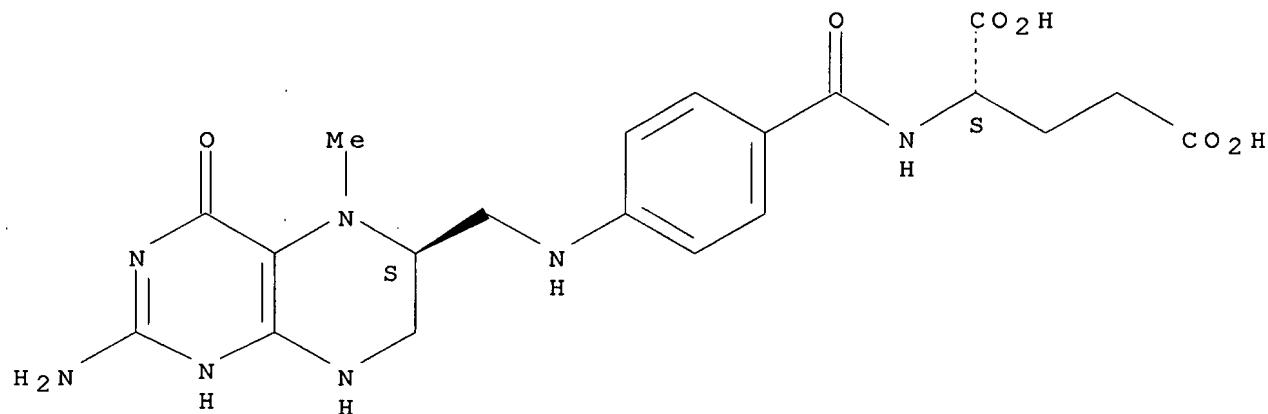


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 IN L-Glutamic acid, N-[4-[[[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]methyl]- (9CI)

6-pteridinyl)methyl]amino]benzoyl]-, (S)-, compd. with  
(S)-1-ethyl-2-pyrrolidinemethanamine (1:1) (9CI)  
MF C<sub>20</sub> H<sub>25</sub> N<sub>7</sub> O<sub>6</sub> . C<sub>7</sub> H<sub>16</sub> N<sub>2</sub>

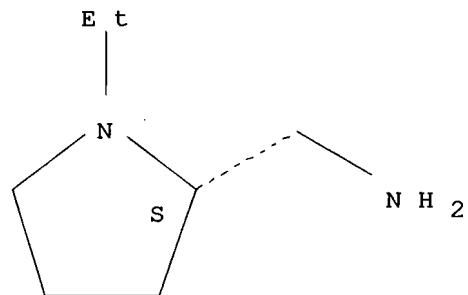
CM 1

Absolute stereochemistry.



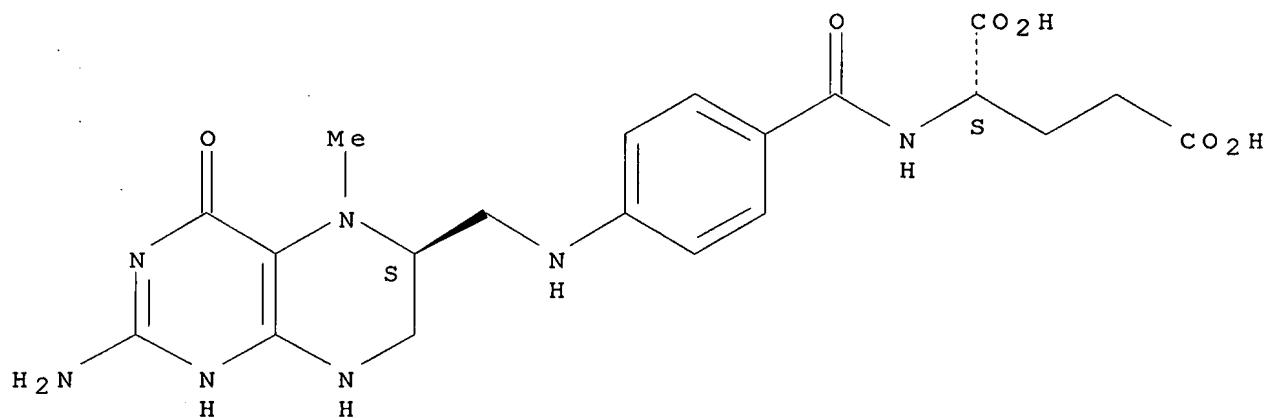
CM 2

Absolute stereochemistry. Rotation (-).



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[[[(6S)-2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt (9CI)  
MF C<sub>20</sub> H<sub>25</sub> N<sub>7</sub> O<sub>6</sub> . x Ca

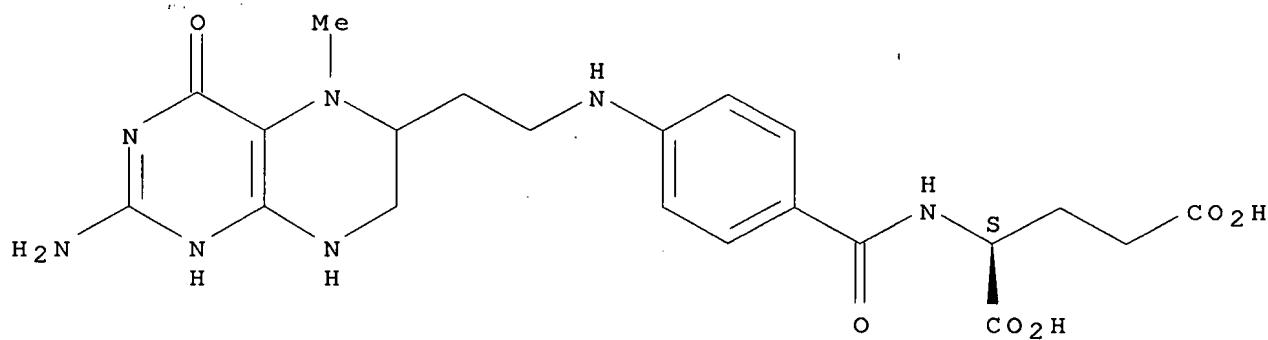
Absolute stereochemistry.



● x Ca

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[[2-(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)ethyl]amino]benzoyl]- (9CI)  
MF C21 H27 N7 O6  
CI COM

Absolute stereochemistry.

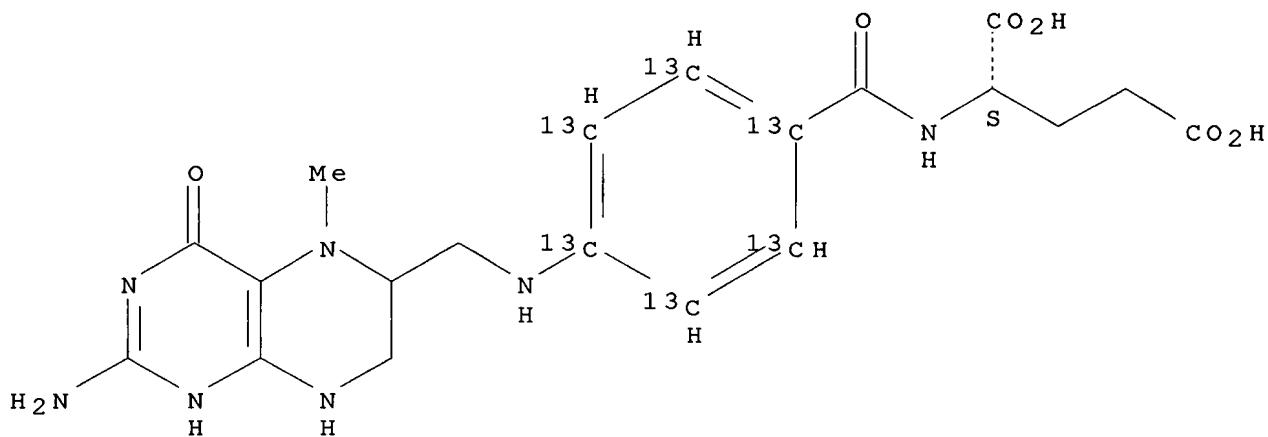


L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-1,2,3,4,5,6-13C6]- (9CI)

MF C<sub>20</sub> H<sub>25</sub> N<sub>7</sub> O<sub>6</sub>

Absolute stereochemistry.



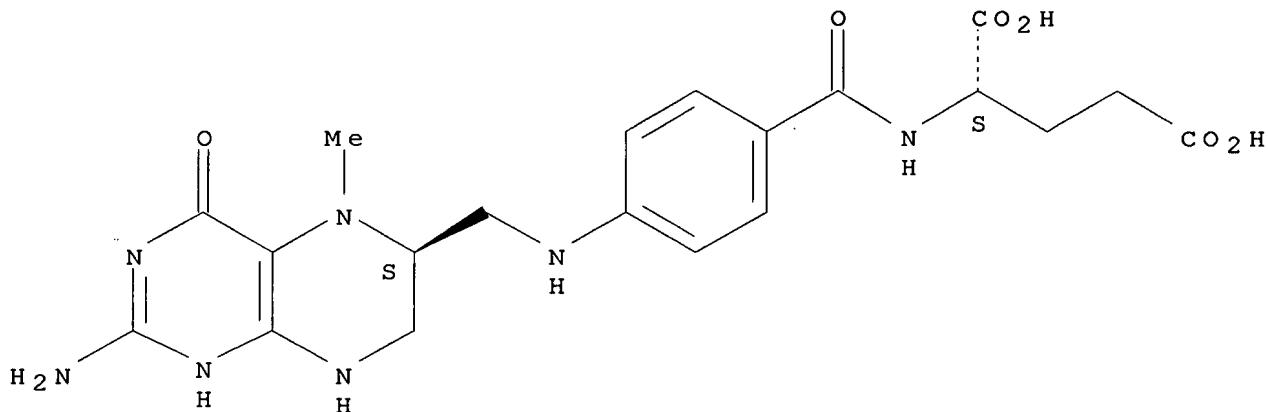
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, (S)-, compd. with cyclohexanamine (9CI)

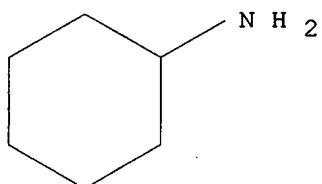
MF C20 H25 N7 O6 . x C6 H13 N

CM 1

Absolute stereochemistry.



CM 2

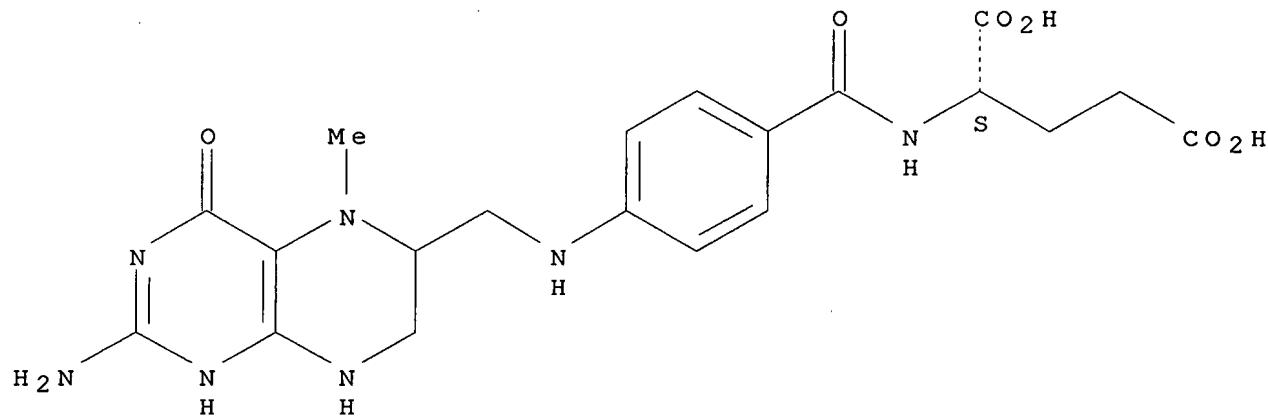


L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, disodium salt (9CI)

MF C20 H25 N7 O6 . 2 Na

Absolute stereochemistry.



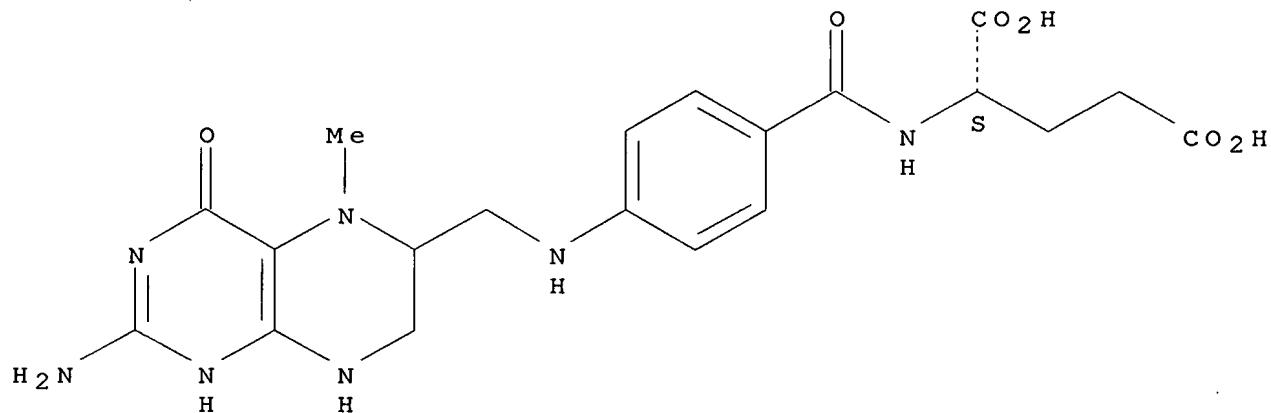
● 2 Na

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, barium salt (1:1) (9CI)

MF C20 H25 N7 O6 . Ba

Absolute stereochemistry.

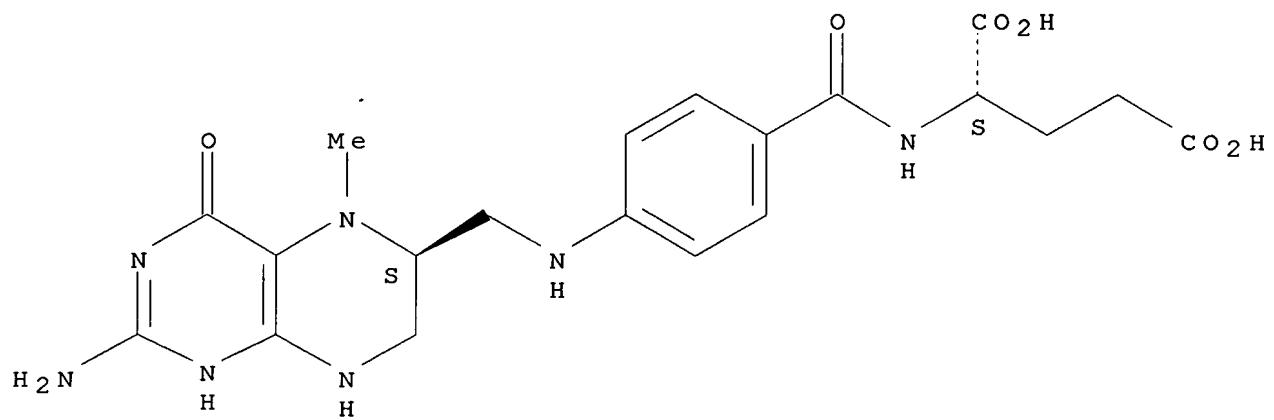


● Ba

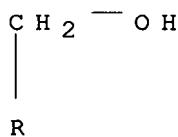
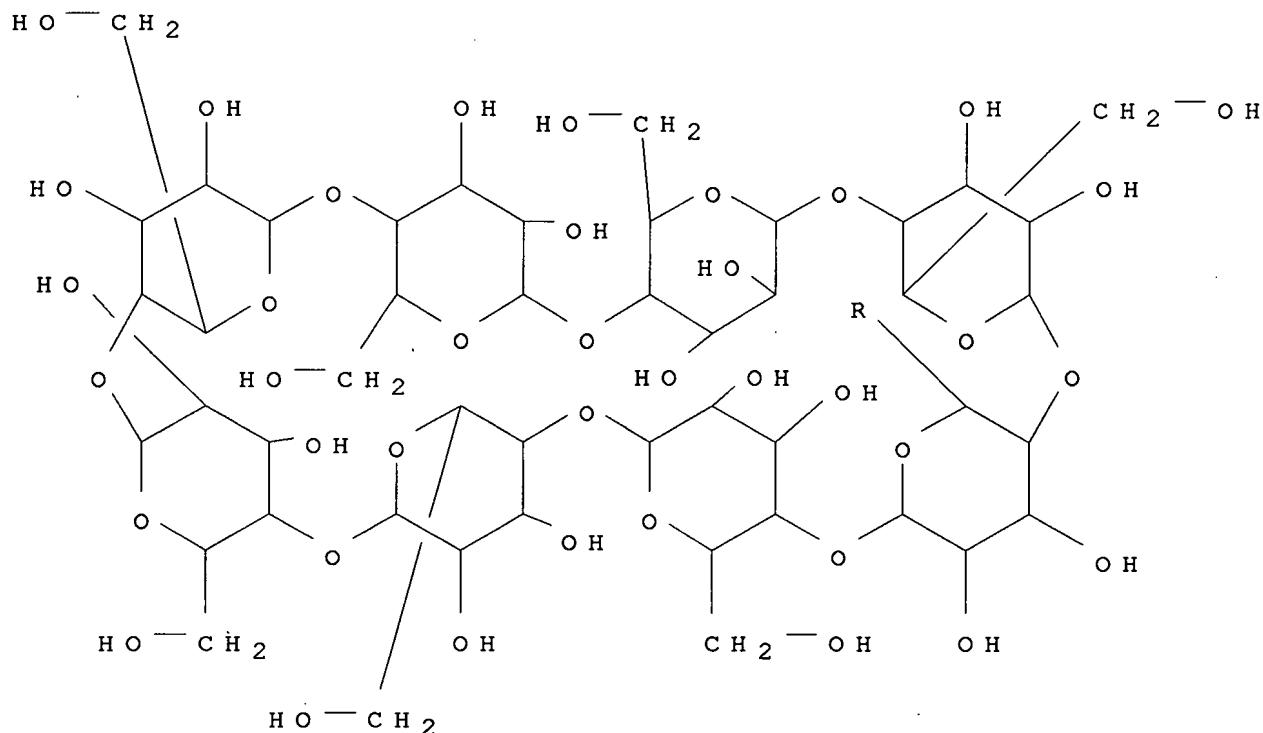
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, (S)-, compd. with  
 .gamma.-cyclodextrin (1:1) (9CI)  
 MF C48 H80 O40 . C20 H25 N7 O6

CM 1

Absolute stereochemistry.

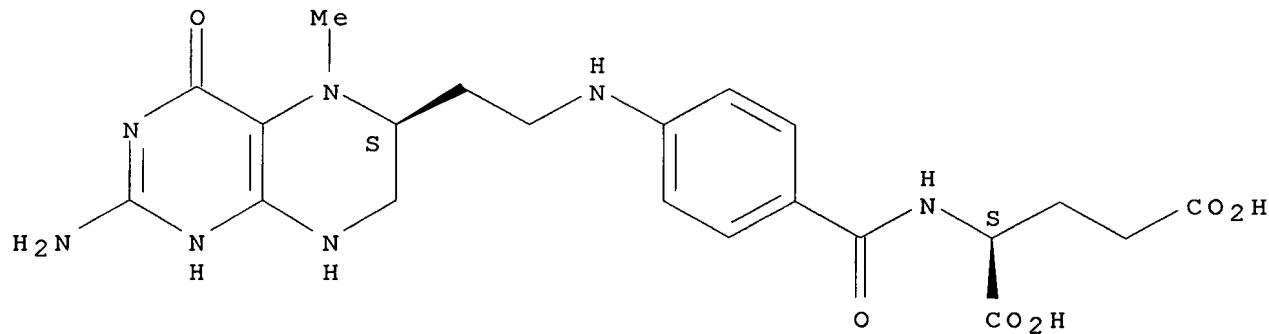


CM 2



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[[2-(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-  
 oxo-6-pteridinyl)ethyl]amino]benzoyl]-, (S)- (9CI)  
 MF C21 H27 N7 O6

Absolute stereochemistry.

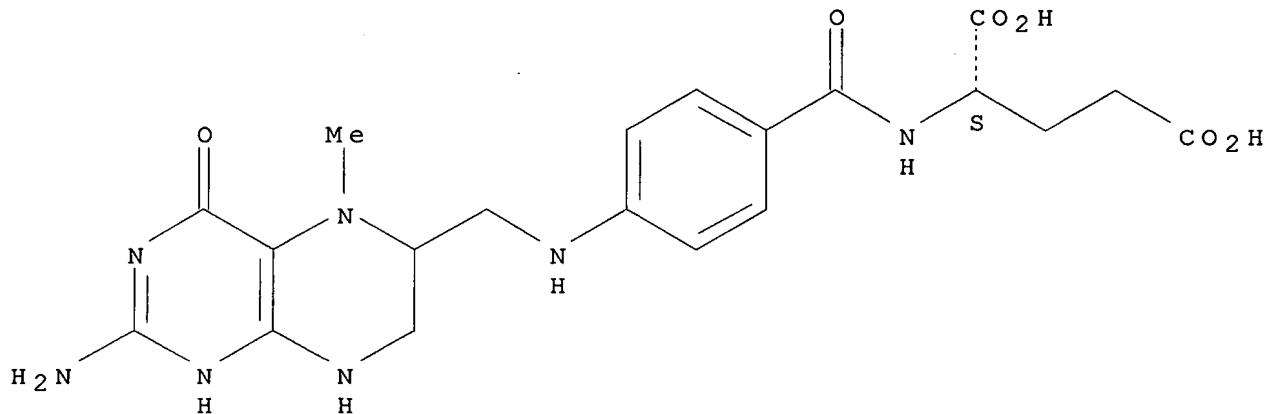


L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, barium salt (9CI)

MF C<sub>20</sub> H<sub>25</sub> N<sub>7</sub> O<sub>6</sub> . x Ba

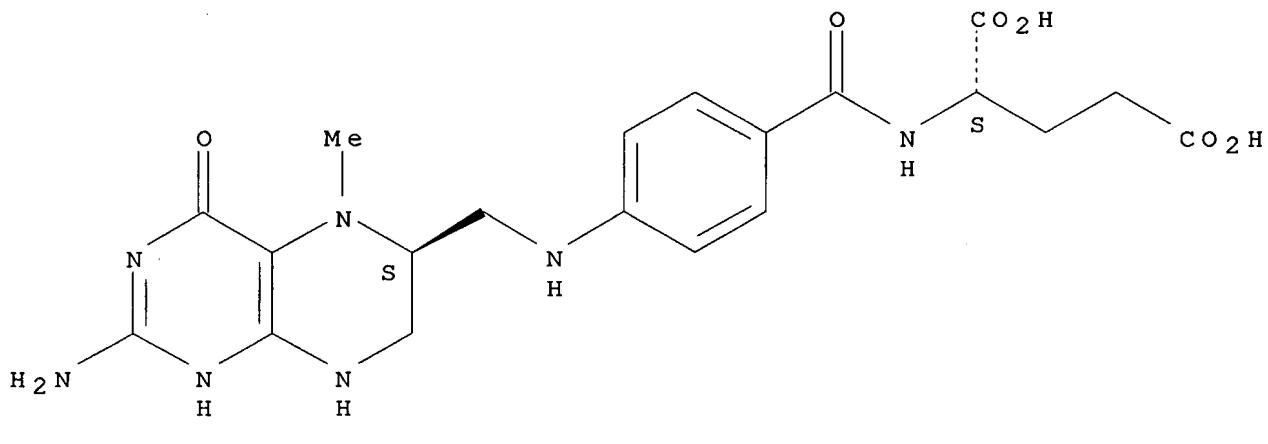
Absolute stereochemistry.



● x Ba

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt (1:1), (S)- (9CI)  
MF C20 H25 N7 O6 . Ca

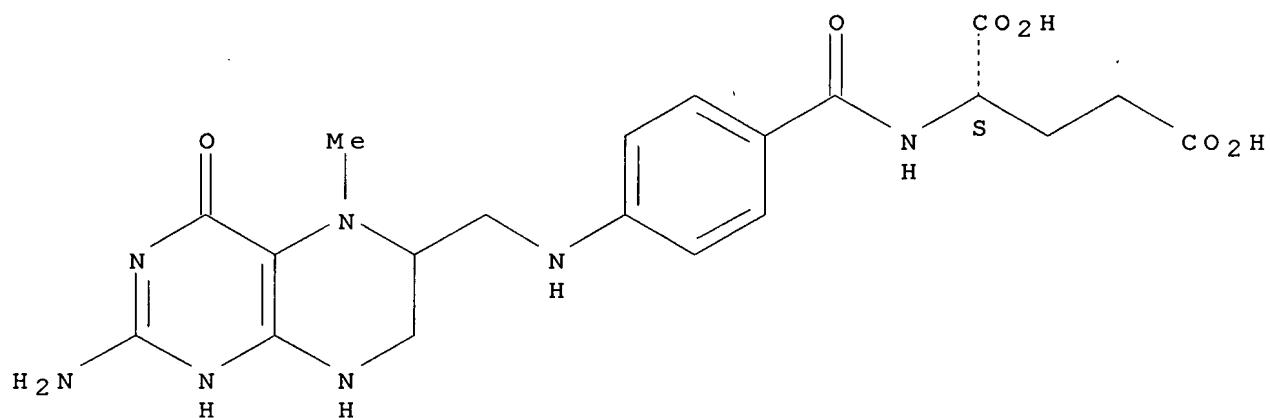
Absolute stereochemistry.



● Ca

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt (9CI)  
MF C20 H25 N7 O6 . x Ca

Absolute stereochemistry.

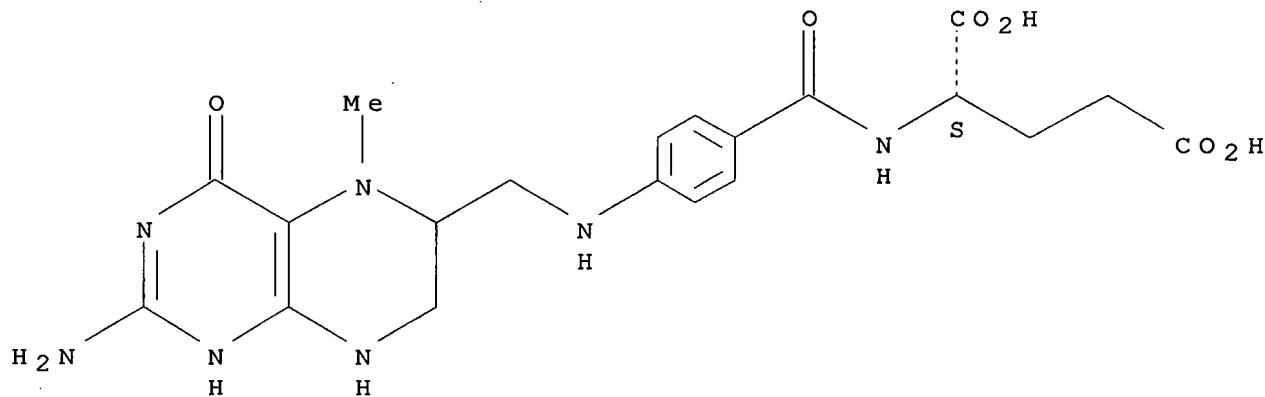


● x Ca

L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, didehydro deriv. (9CI)  
MF C20 H23 N7 O6  
CI IDS

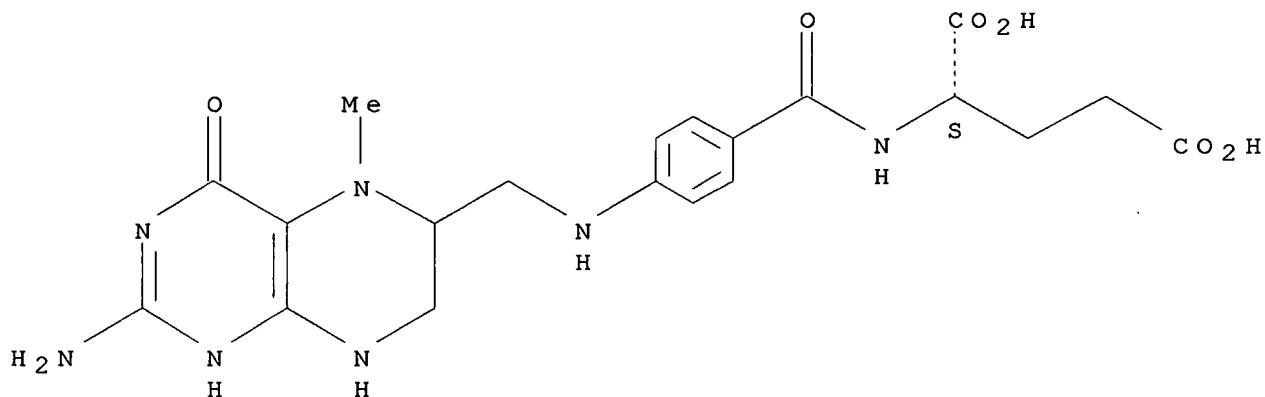
CM 1

Absolute stereochemistry.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]- (9CI)  
 MF C20 H25 N7 O6  
 CI COM

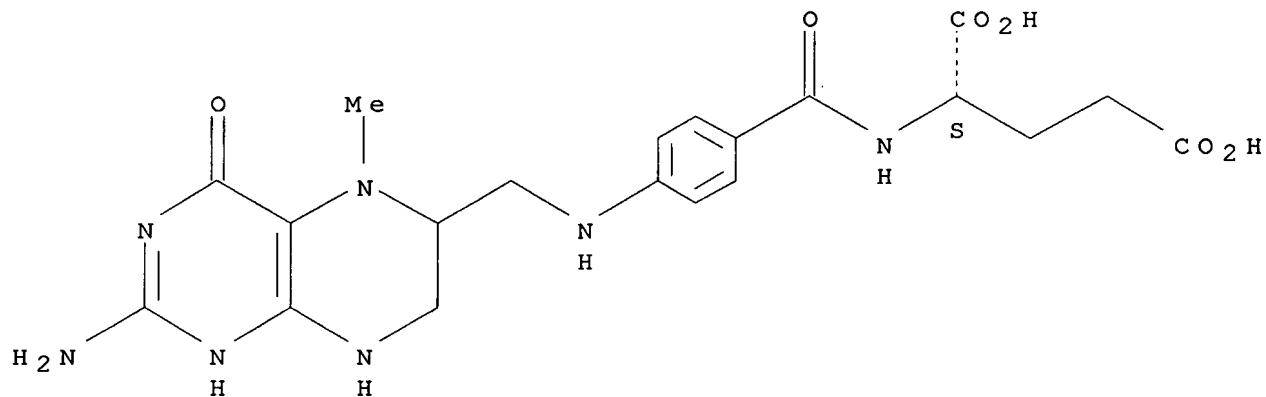
Absolute stereochemistry.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, compd. with N-(1-methylethyl)-2-propanamine (9CI)  
 MF C20 H25 N7 O6 . x C6 H15 N

CM 1

Absolute stereochemistry.



CM 2

i - p r — N H — p r - i

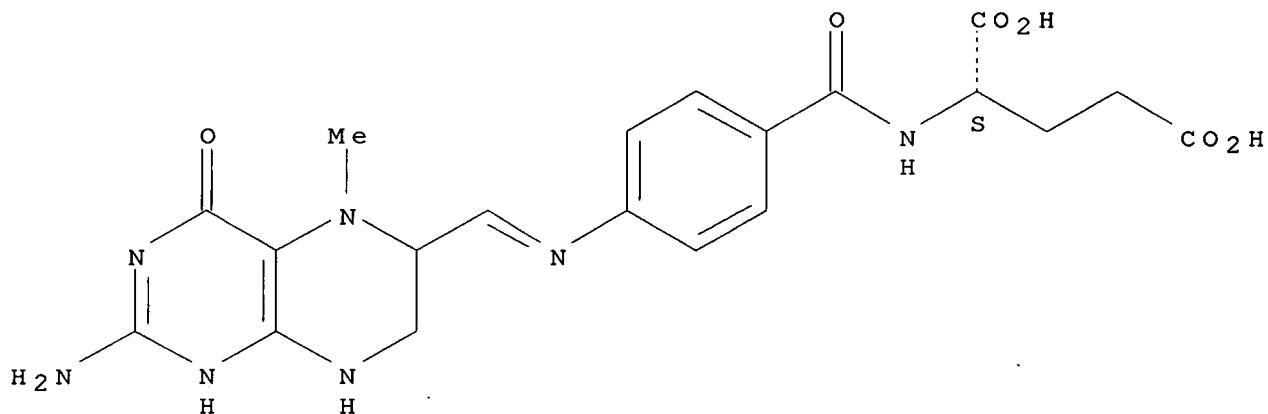
L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS

IN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methylene]amino]benzoyl] - (9CI)

MF C20 H23 N7 O6

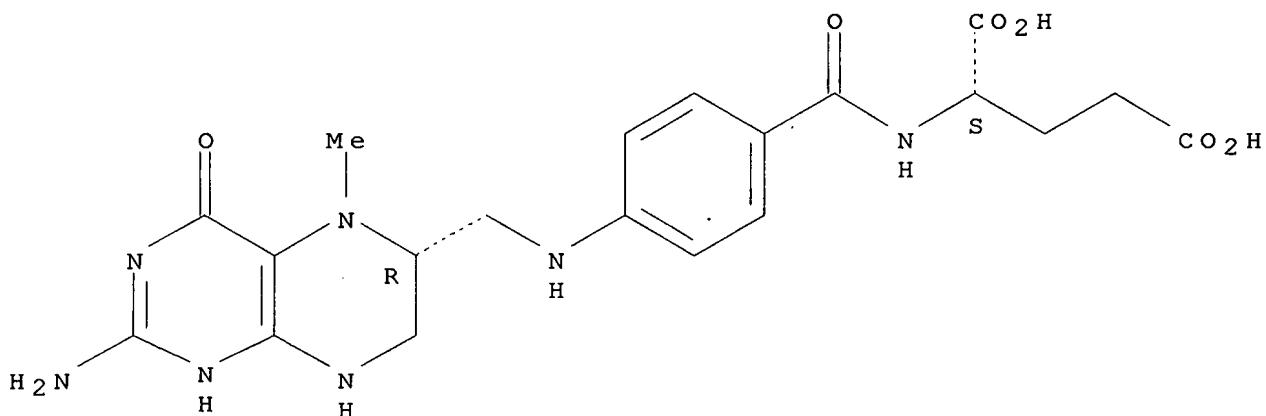
Absolute stereochemistry.

Double bond geometry unknown.



L9 44 ANSWERS REGISTRY COPYRIGHT 2000 ACS  
 IN L-Glutamic acid, N-[4-[[[(6R)-2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]- (9CI)  
 MF C20 H25 N7 O6  
 CI COM

Absolute stereochemistry.



ALL ANSWERS HAVE BEEN SCANNED

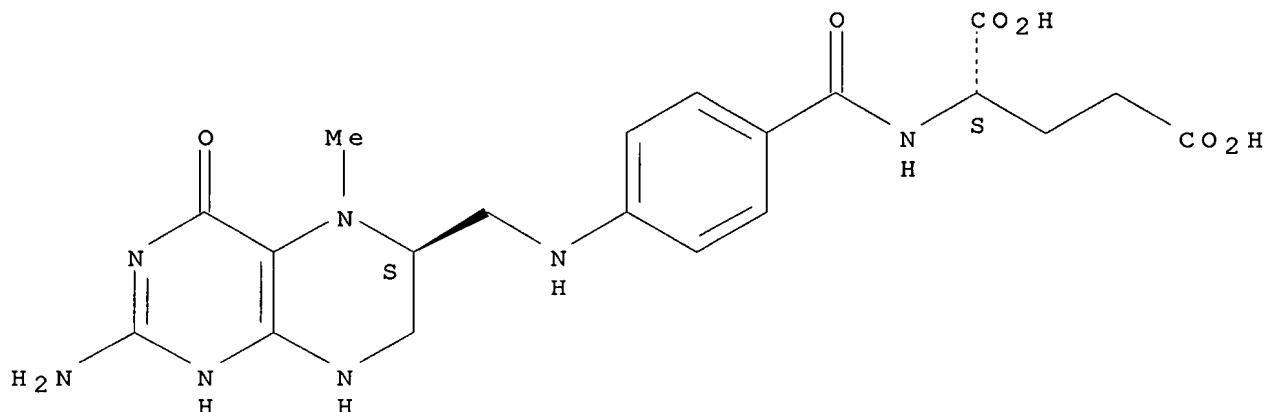
=> s 1/ca and 19

68455 1/CA  
L10 6 1/CA AND L9

=> d 1-6 ide cbib pi

L10 ANSWER 1 OF 6 REGISTRY COPYRIGHT 2000 ACS  
RN 151533-22-1 REGISTRY  
CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, calcium salt (1:1), (S)- (9CI)  
(CA INDEX NAME)  
FS STEREOSEARCH  
MF C20 H25 N7 O6 . Ca  
SR CA  
LC STN Files: CA, CAPLUS, USPATFULL  
CRN (31690-09-2)

Absolute stereochemistry.



● Ca

2 REFERENCES IN FILE CA (1967 TO DATE)  
3 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 122:109342 Method for the industrial preparation of (6S) folic acid derivatives by chromatographic separation. Ambrosini, Leonardo; Sala, Bruno (Irca S.p.A. - Industrie Ricerche Chimiche d'Albano, Italy). Eur. Pat. Appl. EP 627435 A1 19941207, 6 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1993-108752 19930601.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	EP 627435	A1	19941207	EP 1993-108752	19930601
SE	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT,				
	CA 2097884	AA	19941207	CA 1993-2097884	19930607
	ZA 9304111	A	19940117	ZA 1993-4111	19930610
	JP 06345765	A2	19941220	JP 1993-166252	19930610
	CN 1096785	A	19941228	CN 1993-107281	19930619
	CN 1039716	B	19980909		
	BR 9302451	A	19950117	BR 1993-2451	19930623
	AU 9341542	A1	19950119	AU 1993-41542	19930625
	RU 2109015	C1	19980420	RU 1993-37415	19930716

REFERENCE 2: 119:270915 Preparation of N5-methyl- and -formylterahydrofolate

diastereomers. Vecchi, Giuseppe (APR Applied Pharma Research S. A., Switz.). Eur. Pat. Appl. EP 537842 A2 19930421, 5 pp. DESIGNATED

STATES:

R: AT, BE, DE, DK, ES, FR, GB, IT, NL. (English). CODEN: EPXXDW.  
APPLICATION: EP 1992-203089 19921007. PRIORITY: CH 1991-2986 19911010.

PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 537842	CH 683261	A2	19930421	EP 1992-203089	19921007
EP 537842	US 5350850	A3	19930505	CH 1991-2986	19911010
	CA 2080178	R: AT, BE, DE, DK, ES, FR, GB, IT, NL	19940215	US 1992-957176	19921007
		CH 683261	19940927	CA 1992-2080178	19921008
		US 5350850	AA		
		CA 2080178	19930411		

L10 ANSWER 2 OF 6 REGISTRY COPYRIGHT 2000 ACS

RN 139418-92-1 REGISTRY

CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt, (R)- (9CI) (CA INDEX NAME)

FS STEREOSEARCH

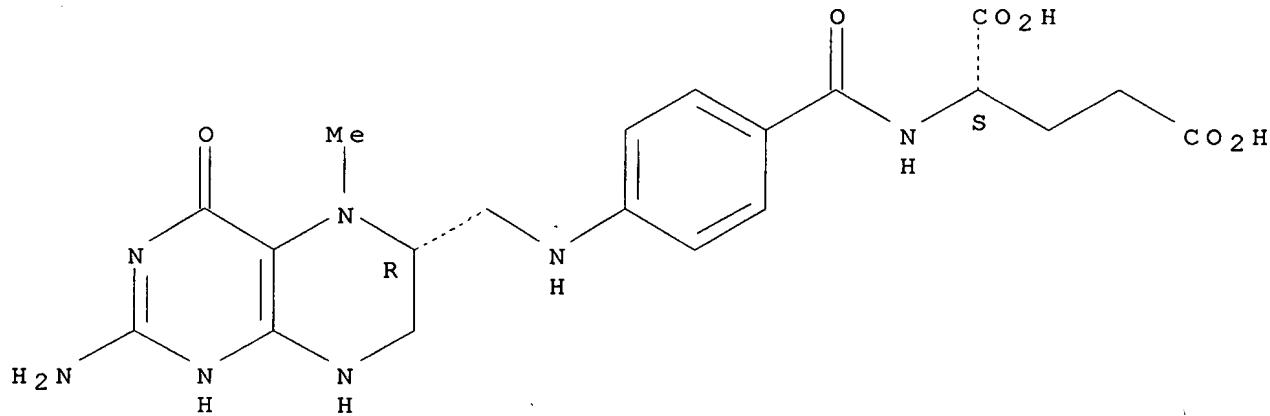
MF C20 H25 N7 O6 . x Ca

SR CA

LC STN Files: CA, CAPLUS, USPATFULL

CRN (31690-08-1)

Absolute stereochemistry.



● x Ca

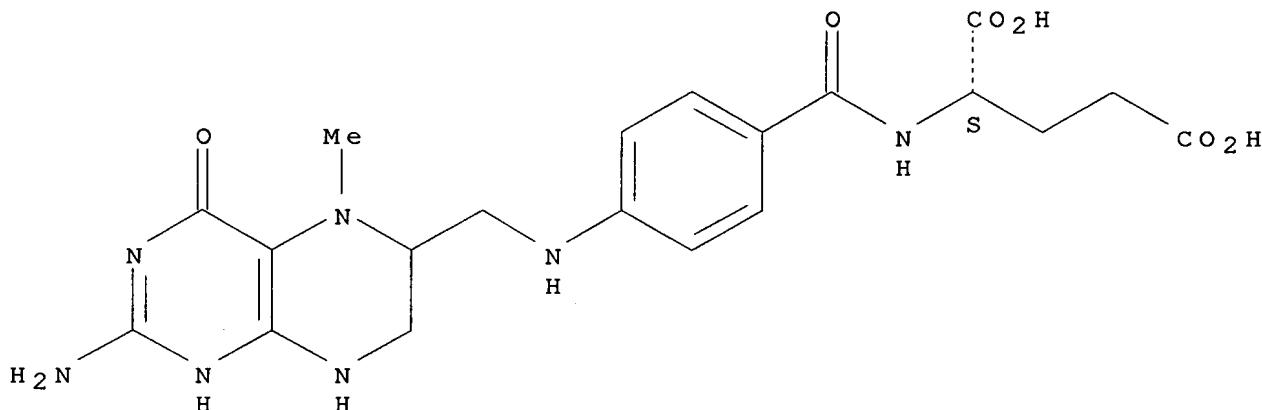
1 REFERENCES IN FILE CA (1967 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 116:129615 Preparation and resolution of ammonium N5-methyl-5,6,7,8-tetrahydrofolates for use as drugs. Marazza, Fabrizio; Jacques, Jean (Sapec S. A., Switz.). Eur. Pat. Appl. EP 455013 A1 19911106, 24 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE. (German). CODEN: EPXXDW. APPLICATION: EP 1991-105715 19910411. PRIORITY: CH 1990-1255 19900412.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 455013	A1	19911106	EP 1991-105715	19910411
EP 455013	B1	19950621		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CH 680731	A	19921030	CH 1990-1255	19900412
CH 680856	A	19921130	CH 1991-3075	19900412
CH 680857	A	19921130	CH 1991-3076	19900412
FI 9101763	A	19911013	FI 1991-1763	19910411
CA 2040397	AA	19911013	CA 1991-2040397	19910411
AU 9174297	A1	19911114	AU 1991-74297	19910411
AU 635831	B2	19930401		
HU 60741	A2	19921028	HU 1991-1186	19910411
<del>US 5194611</del>	A	19930316	US 1991-683772	19910411
ES 2075247	T3	19951001	ES 1991-105715	19910411
JP 07025876	A2	19950127	JP 1991-80091	19910412
JP 2525965	B2	19960821		
<del>US 5382581</del>	A	19950117	US 1992-974565	19921113

RN 139418-88-5 REGISTRY  
 CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, calcium salt (9CI) (CA INDEX  
 NAME)  
 FS STEREOSEARCH  
 MF C20 H25 N7 O6 . x Ca  
 SR CA  
 LC STN Files: CA, CAPLUS, TOXLIT, USPATFULL  
 CRN (134-35-0)

Absolute stereochemistry.



● x Ca

3 REFERENCES IN FILE CA (1967 TO DATE)  
 3 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 132:326081 Compositions for the treatment and prevention of neurological and pathopsychological diseases. Buchholz, Herwig; Meduski, Jerzy D. (Merck Patent G.m.b.H., Germany). PCT Int. Appl. WO 2000025793 A1 20000511, 21 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-EP7688 19991013. PRIORITY: US 1998-PV106230 19981030.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000025793	A1	20000511	WO 1999-EP7688	19991013

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ,  
 DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,  
 JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK,  
 MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,  
 TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,  
 MD, RU, TJ, TM  
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,  
 DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,  
 CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
 AU 9962022 A1 20000522 AU 1999-62022 19991013

AU 9962022 A1 20000522 AU 1999-62022 19991013

REFERENCE 2: 132:326078 Compositions for the treatment and prevention of cardiovascular diseases. Buchholz, Herwig; Meduski, Jerzy D. (Merck Patent G.m.b.H., Germany). PCT Int. Appl. WO 2000025764 A2 20000511, 18 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-EP7689 19991013. PRIORITY: US 1998-PV106205 19981030.

PATENT NO.		KIND	DATE	APPLICATION NO.		DATE
PI	WO 2000025764	A2	20000511	WO 1999-EP7689		19991013
	WO 2000025764	A3	20000713			
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	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9964709	A1	20000522	AU 1999-64709		19991013	

REFERENCE 3: 116:129615 Preparation and resolution of ammonium N5-methyl-5,6,7,8-tetrahydrofolates for use as drugs. Marazza, Fabrizio; Jacques, Jean (Sapec S. A., Switz.). Eur. Pat. Appl. EP 455013 A1 19911106, 24 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE. (German). CODEN: EPXXDW. APPLICATION: EP 1991-105715 19910411. PRIORITY: CH 1990-1255 19900412.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 455013	A1	19911106	EP 1991-105715	19910411
EP 455013	B1	19950621		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CH 680731	A	19921030	CH 1990-1255	19900412
CH 680856	A	19921130	CH 1991-3075	19900412
CH 680857	A	19921130	CH 1991-3076	19900412
FI 9101763	A	19911013	FI 1991-1763	19910411
CA 2040397	AA	19911013	CA 1991-2040397	19910411
AU 9174297	A1	19911114	AU 1991-74297	19910411
AU 635831	B2	19930401		
HU 60741	A2	19921028	HU 1991-1186	19910411
US 5194611	A	19930316	US 1991-683772	19910411
ES 2075247	T3	19951001	ES 1991-105715	19910411
JP 07025876	A2	19950127	JP 1991-80091	19910412
JP 2525965	B2	19960821		

US 5382581

A 19950117

US 1992-974565 19921113

L10 ANSWER 4 OF 6 REGISTRY COPYRIGHT 2000 ACS  
RN 129025-21-4 REGISTRY

CN L-Glutamic acid, N-[4-[[[(6S)-2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]-, calcium salt (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN L-Glutamic acid, N-[4-[[2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]-, calcium salt, (S)-

FS STEREOSEARCH

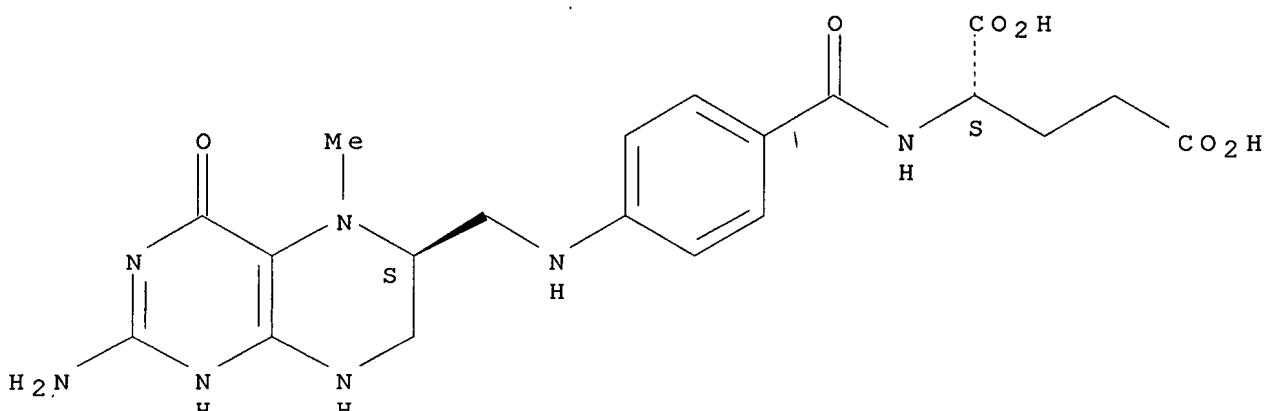
MF C20 H25 N7 O6 . x Ca

SR CA

LC STN Files: CA, CAPLUS, TOXLIT, USPATFULL

CRN (31690-09-2)

Absolute stereochemistry.



● x Ca

5 REFERENCES IN FILE CA (1967 TO DATE)  
5 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 131:78463 The use of tetrahydrofolates in natural stereoisomeric form for production of a pharmaceutical preparation for influencing the homocysteine level, particularly for assisting the remethylation of homocysteine. Mueller, Hans Rudolf; Ullmann, Martin; Moser, Rudolf (Eprova A.-G., Switz.). Can. Pat. Appl. CA 2240571 AA 19981213, 14 pp. (English). CODEN: CPXXEB. APPLICATION: CA 1998-2240571

19980612. PRIORITY: CH 1997-1456 19970613.

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CA 2240571	AA	19981213	CA 1998-2240571	19980612
	EP 898965	A2	19990303	EP 1998-110302	19980605
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 11116482	A2	19990427	JP 1998-162405	19980610
	AU 9870079	A1	19981217	AU 1998-70079	19980611
	US 6011040	A	20000104	US 1998-95572	19980611
	ZA 9805129	A	19981214	ZA 1998-5129	19980612
	CN 1205206	A	19990120	CN 1998-102983	19980612

REFERENCE 2: 119:160820 Separation of (6S)-5-methyltetrahydrofolic acid using N-ethyl-2-aminomethylpyrrolidine. Scheib, Klaus; Klein, Peter; Carter, Robert (Knoll AG, Germany). Ger. Offen. DE 4136921 A1 19930513,

3

pp. (German). CODEN: GWXXBX. APPLICATION: DE 1991-4136921 19911111.

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4136921	A1	19930513	DE 1991-4136921	19911111
	WO 9310118	A1	19930527	WO 1992-EP2515	19921103
	W: AU, CA, FI, JP, KR, NO, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE				
	AU 9228983	A1	19930615	AU 1992-28983	19921103
	AU 664051	B2	19951102		
	EP 612322	A1	19940831	EP 1992-923141	19921103
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	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, SE				
	JP 07500842	T2	19950126	JP 1992-508926	19921103
	AT 177100	E	19990315	AT 1992-923141	19921103
	ES 2127765	T3	19990501	ES 1992-923141	19921103
	ZA 9208643	A	19940511	ZA 1992-8643	19921110
	US 5457202	A	19951010	US 1994-232267	19940506
	FI 9402161	A	19940510	FI 1994-2161	19940510
	NO 9401756	A	19940510	NO 1994-1756	19940510

REFERENCE 3: 117:55978 Pharmaceutical compositions for treatment of neurological complication in AIDS patients. Le Greca, Pietro (Bioresearch S.p.A., Italy). Eur. Pat. Appl. EP 482493 A2 19920429, 19 pp.

DESIGNATED

STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE.  
(English). CODEN: EPXXDW. APPLICATION: EP 1991-117638 19911015.

PRIORITY: IT 1990-21833 19901023.

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 482493	A2	19920429	EP 1991-117638	19911015
	EP 482493	A3	19920902		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
	FI 9104919	A	19920424	FI 1991-4919	19911018
	ZA 9108355	A	19920729	ZA 1991-8355	19911018
	CA 2053826	AA	19920424	CA 1991-2053826	19911021
	AU 9186708	A1	19920430	AU 1991-86708	19911022
	AU 645854	B2	19940127		
	JP 04264031	A2	19920918	JP 1991-302600	19911023
	US 6093703	A	20000725	US 1993-108005	19930818

REFERENCE 4: 116:129615 Preparation and resolution of ammonium N5-methyl-5,6,7,8-tetrahydrofolates for use as drugs. Marazza, Fabrizio; Jacques, Jean (Sapec S. A., Switz.). Eur. Pat. Appl. EP 455013 A1

19911106, 24 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE. (German). CODEN: EPXXDW. APPLICATION: EP 1991-105715 19910411. PRIORITY: CH 1990-1255 19900412.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 455013	A1	19911106	EP 1991-105715	19910411
EP 455013	B1	19950621		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CH 680731	A	19921030	CH 1990-1255	19900412
CH 680856	A	19921130	CH 1991-3075	19900412
CH 680857	A	19921130	CH 1991-3076	19900412
FI 9101763	A	19911013	FI 1991-1763	19910411
CA 2040397	AA	19911013	CA 1991-2040397	19910411
AU 9174297	A1	19911114	AU 1991-74297	19910411
AU 635831	B2	19930401		
HU 60741	A2	19921028	HU 1991-1186	19910411
US 5194611	A	19930316	US 1991-683772	19910411
ES 2075247	T3	19951001	ES 1991-105715	19910411
JP 07025876	A2	19950127	JP 1991-80091	19910412
JP 2525965	B2	19960821		
US 5382581	A	19950117	US 1992-974565	19921113

REFERENCE 5: 113:110799 Separation of 5,10-methenyl-(6R)-, 5-formyl-(6S)-, and 5-methyl-(6S)-tetrahydrofolate mixtures via fractional crystallization. Mueller, Hans Rudolf; Ullmann, Martin; Conti, Josef; Muerdel, Guenter (Eprova A.-G., Switz.). Eur. Pat. Appl. EP 348641 A2 19900103, 9 pp. DESIGNATED STATES: R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE. (German). CODEN: EPXXDW. APPLICATION: EP 1989-108451 19890511. PRIORITY: DE 1988-3821875 19880629.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 348641	A2	19900103	EP 1989-108451	19890511
EP 348641	A3	19910424		
EP 348641	B1	19950621		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
DE 3821875	C1	19900215	DE 1988-3821875	19880629
ES 2075010	T3	19951001	ES 1989-108451	19890511
DK 8902377	A	19891230	DK 1989-2377	19890516
CN 1038813	A	19900117	CN 1989-104352	19890626
CN 1032206	B	19960703		
DD 284018	A5	19901031	DD 1989-330013	19890627
FI 8903158	A	19891230	FI 1989-3158	19890628
FI 93960	B	19950315		
FI 93960	C	19950626		
NO 8902697	A	19900102	NO 1989-2697	19890628
NO 167665	B	19910819		
NO 167665	C	19911127		
AU 8937161	A1	19900104	AU 1989-37161	19890628
AU 624620	B2	19920618		
HU 50822	A2	19900328	HU 1989-3250	19890628
HU 203237	B	19910628		
ZA 8904896	A	19900328	ZA 1989-4896	19890628
CA 1339675	A1	19980217	CA 1989-604256	19890628
JP 02048577	A2	19900219	JP 1989-165487	19890629
JP 08026022	B4	19960313		
US 5006655	A	19910409	US 1989-373007	19890629

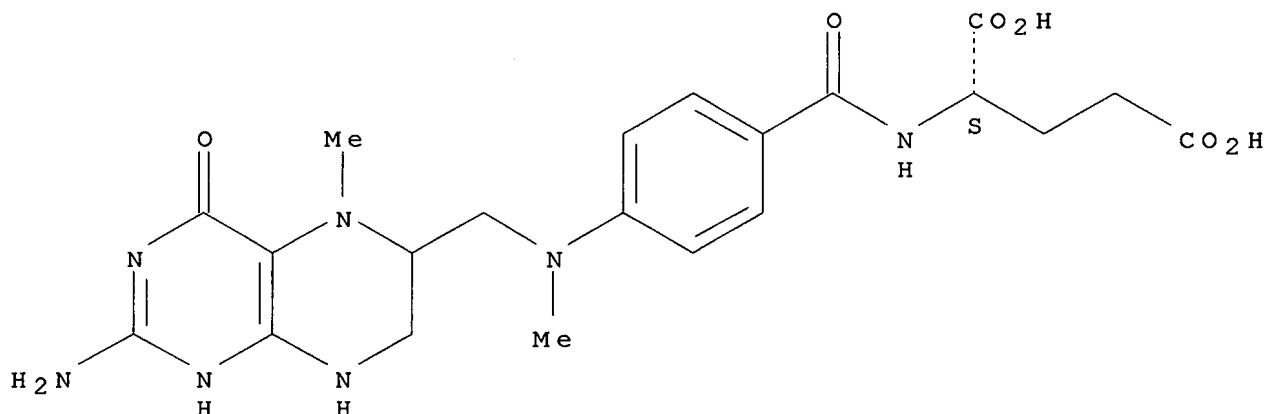
L10 ANSWER 5 OF 6 REGISTRY COPYRIGHT 2000 ACS

RN 80402-47-7 REGISTRY

CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]methylamino]benzoyl]-, calcium salt (1:1) (9CI)

(CA INDEX NAME)  
FS STEREOSEARCH  
MF C21 H27 N7 O6 . Ca  
LC STN Files: CA, CAPLUS, TOXLIT  
CRN (1553-43-1)

Absolute stereochemistry.



● Ca

1 REFERENCES IN FILE CA (1967 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 96:45942 Synthesis of pseudocofactor analogs as potential inhibitors of the folate enzymes. Temple, Carroll, Jr.; Bennett, L. Lee, Jr.; Rose, Jerry D.; Elliott, Robert D.; Montgomery, John H. (Kettering-Meyer Lab., Southern Res. Inst., Birmingham, AL, 35255, USA). J. Med. Chem., 25(2), 161-6 (English) 1982. CODEN: JMCMAR. ISSN: 0022-2623.

L10 ANSWER 6 OF 6 REGISTRY COPYRIGHT 2000 ACS

RN 26560-38-3 REGISTRY

CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt (1:1) (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt (1:1), L- (8CI)

OTHER NAMES:

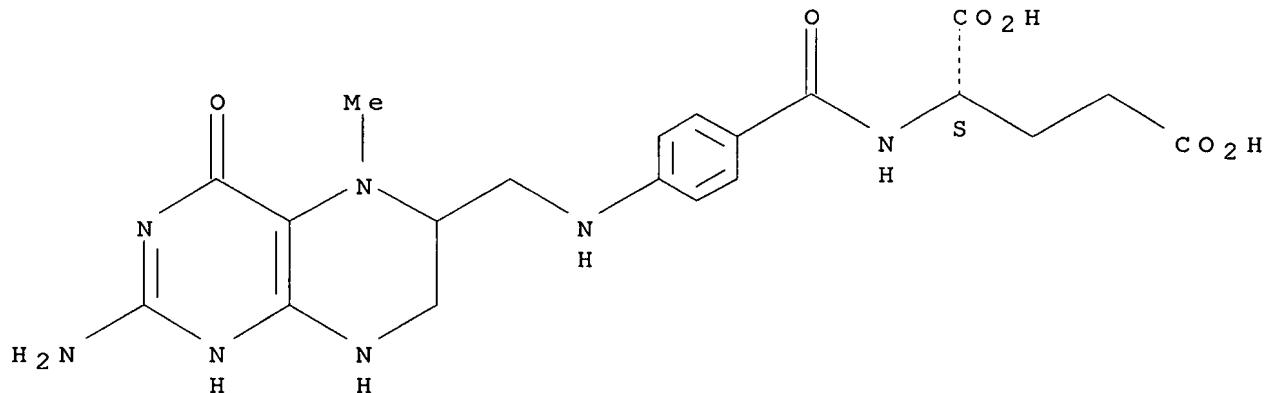
CN Calcium N5-methyltetrahydrofolate

FS STEREOSEARCH

MF C20 H25 N7 O6 . Ca

CRN 134-35-0  
CMF C20 H25 N7 O6

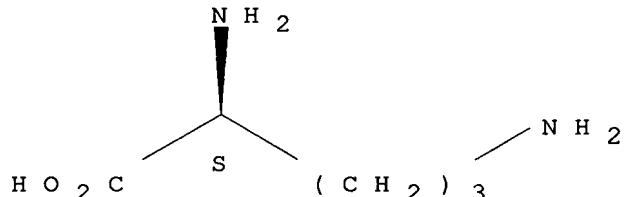
Absolute stereochemistry.



CM 2

CRN 70-26-8  
CMF C5 H12 N2 O2

Absolute stereochemistry.



2 REFERENCES IN FILE CA (1967 TO DATE)  
2 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 77:66198 Tetrahydrofolic acid salts for injection. Murakami, Masuo; Imai, Kazuo; Ito, Yoshiki (Yamanouchi Pharmaceutical Co., Ltd.). Japan. JP 47019917 B4 19720606 Showa, 3 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1970-133 19691226.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 47019917	B4	19720606	JP 1970-133	19691226

REFERENCE 2: 75:64273 Salts of 5,6,7,8-tetrahydrofolic acid with basic amino

acids. Murakami, Masuo; Imai, Kazuo; Ito, Noriki (Yamanouchi Pharmaceutical Co. Ltd.). Ger. Offen. DE 2063027 19710701, 7 pp. (German). CODEN: GWXXBX. PRIORITY: JP 19691226.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	DE 2063027	A	19710701	DE 1970-2063027	19701222
	FR 2081399	A5	19711203	FR 1970-46665	19701224

L5 ANSWER 3 OF 11 REGISTRY COPYRIGHT 2000 ACS

RN 33140-03-3 REGISTRY

CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, compd. with L-arginine (1:2) (9CI)  
(CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl)methyl]amino]benzoyl-, L-, compd. with L-arginine (1:2) (8CI)

CN L-Arginine, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-L-glutamate (2:1) (9CI)

FS STEREOSEARCH

MF C20 H25 N7 O6 . 2 C6 H14 N4 O2

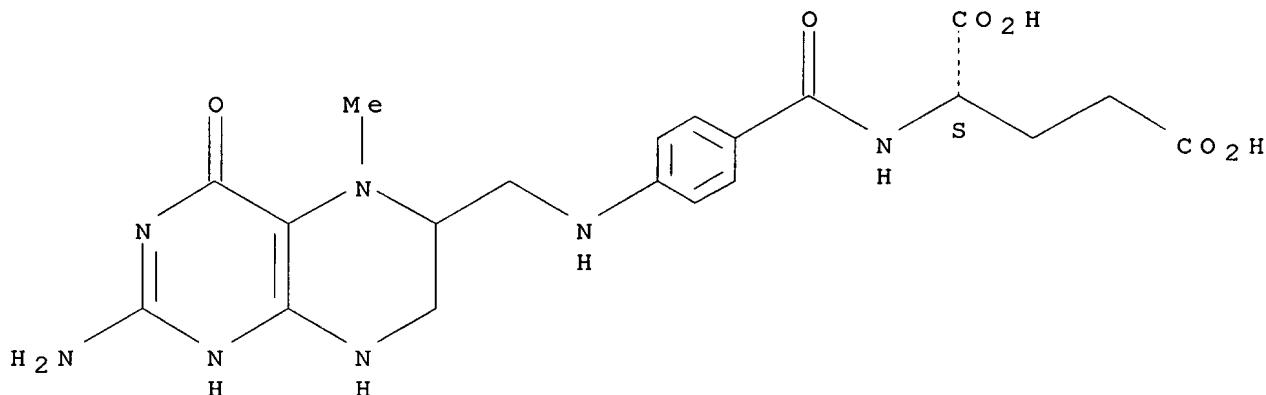
LC STN Files: CA, CAPLUS

CM 1

CRN 134-35-0

CMF C20 H25 N7 O6

Absolute stereochemistry.

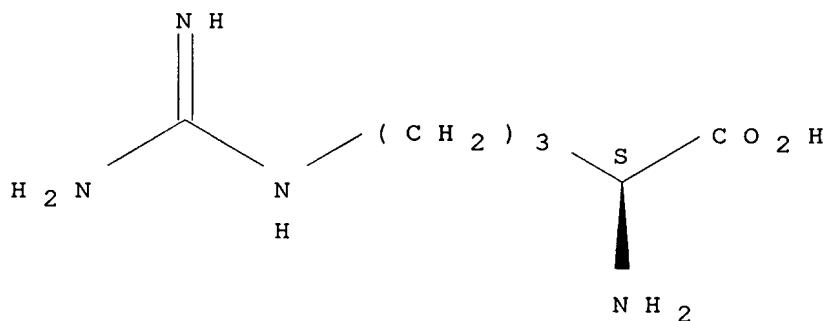


CM 2

CRN 74-79-3

CMF C6 H14 N4 O2

Absolute stereochemistry.



2 REFERENCES IN FILE CA (1967 TO DATE)  
 2 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 77:66198 Tetrahydrofolic acid salts for injection. Murakami, Masuo; Imai, Kazuo; Ito, Yoshiki (Yamanouchi Pharmaceutical Co., Ltd.). Japan. JP 47019917 B4 19720606 Showa, 3 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1970-133 19691226.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 47019917	B4	19720606	JP 1970-133	19691226

REFERENCE 2: 75:64273 Salts of 5,6,7,8-tetrahydrofolic acid with basic amino

acids. Murakami, Masuo; Imai, Kazuo; Ito, Noriki (Yamanouchi Pharmaceutical Co. Ltd.). Ger. Offen. DE 2063027 19710701, 7 pp. (German). CODEN: GWXXBX. PRIORITY: JP 19691226.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 2063027	A	19710701	DE 1970-2063027	19701222
FR 2081399	A5	19711203	FR 1970-46665	19701224

L5 ANSWER 4 OF 11 REGISTRY COPYRIGHT 2000 ACS

RN 31690-09-2 REGISTRY

CN L-Glutamic acid, N-[4-[[[(6S)-2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]- (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Glutamic acid, N-[p-[[2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl]methyl]amino]benzoyl]-, L-(-)- (8CI)

CN L-Glutamic acid, N-[4-[[2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]-, (S)-

OTHER NAMES:

CN (6S)-5-Methyltetrahydrofolic acid

CN 1-N5-Methyl-L-tetrahydrofolic acid

FS STEREOSEARCH

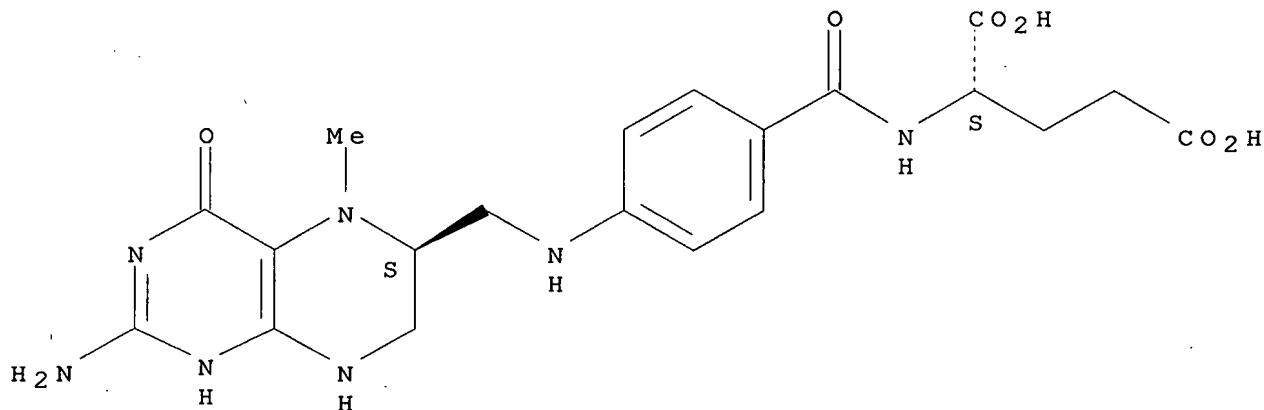
DR 150950-03-1

MF C20 H25 N7 O6

CI COM

LC STN Files: BEILSTEIN\*, CA, CAPLUS, IPA, TOXLINE, TOXLIT, USPATFULL  
 (\*File contains numerically searchable property data)

Absolute stereochemistry.



43 REFERENCES IN FILE CA (1967 TO DATE)

3 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

43 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 132:30292 Bioactivity of orally administered unnatural isomers,

[6R]-5-formyltetrahydrofolate and [6S]-5,10-methenyltetrahydrofolate, in humans. Baggott, Joseph E.; Tamura, Tsunenobu (Department of Nutrition Sciences, University of Alabama at Birmingham, Birmingham, AL, 35294-3360, USA). Biochim. Biophys. Acta, 1472(1-2), 323-332 (English) 1999. CODEN: BBACAO. ISSN: 0006-3002. Publisher: Elsevier Science B.V..

REFERENCE 2: 131:78463 The use of tetrahydrofolates in natural stereoisomeric form for production of a pharmaceutical preparation for influencing the homocysteine level, particularly for assisting the remethylation of homocysteine. Mueller, Hans Rudolf; Ullmann, Martin; Moser, Rudolf (Eprova A.-G., Switz.). Can. Pat. Appl. CA 2240571 AA 19981213, 14 pp. (English). CODEN: CPXXEB. APPLICATION: CA 1998-2240571

19980612. PRIORITY: CH 1997-1456 19970613.

PI	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	CA 2240571	AA	19981213	CA 1998-2240571	19980612
	EP 898965	A2	19990303	EP 1998-110302	19980605
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 11116482	A2	19990427	JP 1998-162405	19980610
	AU 9870079	A1	19981217	AU 1998-70079	19980611
	US 6011040	A	20000104	US 1998-95572	19980611
	ZA 9805129	A	19981214	ZA 1998-5129	19980612
	CN 1205206	A	19990120	CN 1998-102983	19980612

REFERENCE 3: 131:69925 Complete mapping of divergent amino acids responsible

for differential ligand binding of folate receptors .alpha. and .beta.. Maziarz, Karen M.; Monaco, Hugo L.; Shen, Feng; Ratnam, Manohar

(Department of Biochemistry and Molecular Biology, Medical College of Ohio, Toledo, OH, 43614-5804, USA). J. Biol. Chem., 274(16), 11086-11091 (English) 1999. CODEN: JBCHA3. ISSN: 0021-9258. Publisher: American Society for Biochemistry and Molecular Biology.

REFERENCE 4: 126:340207 Identification of Amino Acid Residues that Determine

the Differential Ligand Specificities of Folate Receptors .alpha. and .beta.. Shen, Feng; Zheng, Xuan; Wang, Jianyong; Ratnam, Manohar (Department of Biochemistry Molecular Biology, Medical College of Ohio, Toledo, OH, 43699-0008, USA). Biochemistry, 36(20), 6157-6163 (English) 1997. CODEN: BICHAW. ISSN: 0006-2960. Publisher: American Chemical Society.

REFERENCE 5: 124:110907 A Conformational Change in the Methyltransferase from Clostridium thermoaceticum Facilitates the Methyl Transfer from (6S)-Methyltetrahydrofolate to the Corrinoid/Iron Sulfur Protein in the Acetyl-CoA Pathway. Zhao, Shaying; Ragsdale, Stephen W. (Department of Biochemistry, University of Nebraska, Lincoln, NE, 68588-0664, USA). Biochemistry, 35(7), 2476-81 (English) 1996. CODEN: BICHAW. ISSN: 0006-2960.

REFERENCE 6: 122:259142 Folate Receptor Type .gamma. Is Primarily a Secretory Protein Due to Lack of an Efficient Signal for Glycosylphosphatidylinositol Modification: Protein Characterization and Cell Type Specificity. Shen, Feng; Wu, Marietta; Ross, John F.; Miller, Danielle; Ratnam, Manohar (Department of Biochemistry and Molecular Biology, Medical College of Ohio, Toledo, OH, 43699-0008, USA). Biochemistry, 34(16), 5660-5 (English) 1995. CODEN: BICHAW. ISSN: 0006-2960.

REFERENCE 7: 121:245273 Different Stereospecific Protein Binding of Tetrahydrofolates to Human Serum Albumin. Mader, Robert M.; Steger, Gunther G.; Rizovski, Blanka; Jakesz, Raimund; Rainer, Hugo (Department of Internal Medicine I, University of Vienna, Vienna, A-1090, Austria). J. Pharm. Sci., 83(9), 1247-9 (English) 1994. CODEN: JPMSAE. ISSN: 0022-3549.

REFERENCE 8: 121:99010 Pharmacokinetics of rac-leucovorin vs. [S]-leucovorin

in patients with advanced gastrointestinal cancer. Mader, Robert M.; Steger, Gunther G.; Rizovski, Blanka; Sieder, Anna E.; Locker, Gottfried; Gnant, Michael F. X.; Jakesz, Raimund; Rainer, Hugo (Dep. Intern. Med. I, Univ. Vienna, Vienna, A-1090, Austria). Br. J. Clin. Pharmacol., 37(3), 243-8 (English) 1994. CODEN: BCPHBM. ISSN: 0306-5251.

REFERENCE 9: 121:35195 Process for the preparation of (6S)-5,6,7,8-tetrahydrofolic acid.. Jequier, Pascal; Marazza, Fabrizio (Sapec s.a. Fine Chemicals, Switz.). Eur. Pat. Appl. EP 600460 A1 19940608, 6 pp. DESIGNATED STATES: R: CH, DE, ES, FR, GB, IT, LI. (German). CODEN: EPXXDW. APPLICATION: EP 1993-119354 19931201. PRIORITY: CH 1992-3674 19921201.

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 600460	A1	19940608	EP 1993-119354	19931201
	EP 600460	B1	19990217		
	R: CH, DE, ES, FR, GB, IT, LI				
	CH 686672	A	19960531	CH 1992-3674	19921201
	JP 06211857	A2	19940802	JP 1993-301646	19931201
	JP 2588363	B2	19970305		
	US 5489684	A	19960206	US 1993-159542	19931201

ES 2129486

T3 19990616

ES 1993-119354 19931201

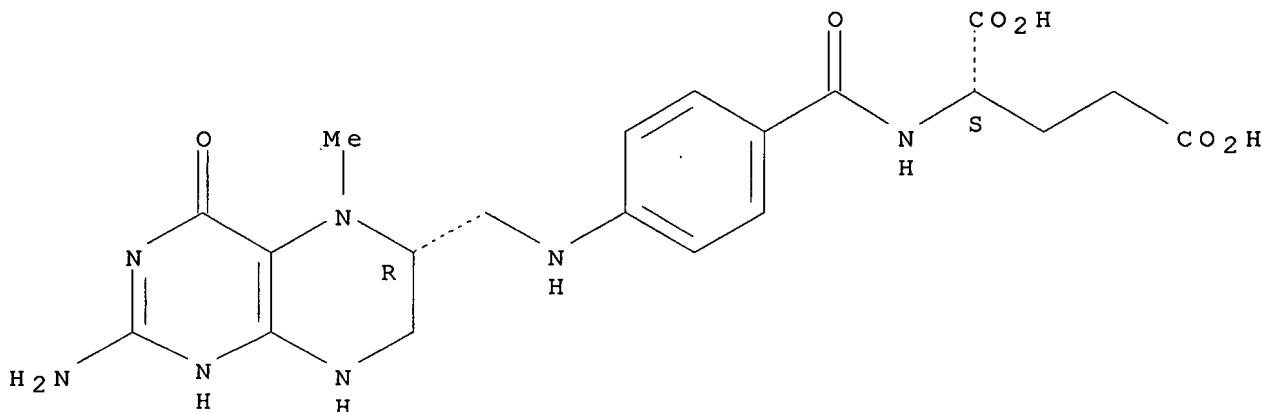
REFERENCE 10: 121:365 Role of folylpolyglutamate synthetase in the metabolism and cytotoxicity of 5-deazaacyclotetrahydrofolate, an anti-purine drug. Kim, Jong Sang; Shane, Barry (Dep. Nutr. Sci., Univ. California, Berkeley, CA, 94720, USA). J. Biol. Chem., 269(13), 9714-20 (English) 1994.

CODEN:

JBCHA3. ISSN: 0021-9258.

L5 ANSWER 5 OF 11 REGISTRY COPYRIGHT 2000 ACS  
 RN 31690-08-1 REGISTRY  
 CN L-Glutamic acid, N-[4-[[[(6R)-2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Glutamic acid, N-[p-[[2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl]methyl]amino]benzoyl]-, L-(+)- (8CI)  
 CN L-Glutamic acid, N-[4-[[2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl]methyl]amino]benzoyl]-, (R)-  
 OTHER NAMES:  
 CN d-N5-Methyl-L-tetrahydrofolic acid  
 FS STEREOSEARCH  
 MF C20 H25 N7 O6  
 CI COM  
 LC STN Files: BEILSTEIN\*, CA, CAPLUS, TOXLIT, USPATFULL  
 (\*File contains numerically searchable property data)

Absolute stereochemistry.



23 REFERENCES IN FILE CA (1967 TO DATE)  
 24 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 133:172014 Folic acid reverts dysfunction of endothelial nitric oxide synthase. Stroes, E. S. G.; Van Faassen, E. E.; Yo, M.; Martasek, P.; Boer, P.; Govers, R.; Rabelink, T. J. (Department of Vascular Medicine, University Hospital Utrecht, Utrecht, 3584, Neth.). Circ. Res.,

86(11), 1129-1134 (English) 2000. CODEN: CIRUAL. ISSN: 0009-7330.  
Publisher: Lippincott Williams & Wilkins.

REFERENCE 2: 131:69925 Complete mapping of divergent amino acids responsible

for differential ligand binding of folate receptors .alpha. and .beta..  
Maziarz, Karen M.; Monaco, Hugo L.; Shen, Feng; Ratnam, Manohar  
(Department of Biochemistry and Molecular Biology, Medical College of  
Ohio, Toledo, OH, 43614-5804, USA). J. Biol. Chem., 274(16), 11086-11091  
(English) 1999. CODEN: JBCHA3. ISSN: 0021-9258. Publisher: American  
Society for Biochemistry and Molecular Biology.

REFERENCE 3: 126:340207 Identification of Amino Acid Residues that Determine

the Differential Ligand Specificities of Folate Receptors .alpha. and .beta..  
Shen, Feng; Zheng, Xuan; Wang, Jianyong; Ratnam, Manohar  
(Department of Biochemistry Molecular Biology, Medical College of Ohio,  
Toledo, OH, 43699-0008, USA). Biochemistry, 36(20), 6157-6163 (English)  
1997. CODEN: BICHAW. ISSN: 0006-2960. Publisher: American Chemical  
Society.

REFERENCE 4: 122:259142 Folate Receptor Type .gamma. Is Primarily a Secretory Protein Due to Lack of an Efficient Signal for Glycosylphosphatidylinositol Modification: Protein Characterization and Cell Type Specificity. Shen, Feng; Wu, Marietta; Ross, John F.; Miller, Danielle; Ratnam, Manohar (Department of Biochemistry and Molecular Biology, Medical College of Ohio, Toledo, OH, 43699-0008, USA). Biochemistry, 34(16), 5660-5 (English) 1995. CODEN: BICHAW. ISSN: 0006-2960.

REFERENCE 5: 121:245273 Different Stereospecific Protein Binding of Tetrahydrofolates to Human Serum Albumin. Mader, Robert M.; Steger, Guenther G.; Rizovski, Blanka; Jakesz, Raimund; Rainer, Hugo (Department of Internal Medicine I, University of Vienna, Vienna, A-1090, Austria). J. Pharm. Sci., 83(9), 1247-9 (English) 1994. CODEN: JPMSAE. ISSN: 0022-3549.

REFERENCE 6: 120:213304 Increased expression and characterization of two distinct folate binding proteins in murine erythroleukemia cells. Brigle,

Kevin E.; Spinella, Michael J.; Westin, Eric H.; Goldman, I. David (Dep. Med., Virginia Commonw. Univ., Richmond, VA, 23298, USA). Biochem. Pharmacol., 47(2), 337-45 (English) 1994. CODEN: BCPCA6. ISSN: 0006-2952.

REFERENCE 7: 120:573 Medicaments for treating glycinamide ribonucleotide (GAR)-transformylase-dependent tumors. Grindley, Gerald Burr; Young, Charles William (Lilly, Eli, and Co., USA; Sloan-Kettering Institute for Cancer Research). Eur. Pat. Appl. EP 567324 A1 19931027, 12 pp.

DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, NL, PT, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1993-303117

19930421. PRIORITY: US 1992-872469 19920423.

PATENT NO. KIND DATE APPLICATION NO. DATE

PI	EP 567324	A1	19931027	EP 1993-303117	19930421
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	AU 9337053	A1	19931028	AU 1993-37053	19930421
	AU 663369	B2	19951005		
	CA 2094687	AA	19931024	CA 1993-2094687	19930422

HU 64226  
JP 07258088

A2 19931228  
A2 19951009

HU 1993-1187  
JP 1993-95784

19930422  
19930422

REFERENCE 8: 119:216673 Simultaneous chiral separation of leucovorin and its

major metabolite 5-methyltetrahydrofolate by capillary electrophoresis using cyclodextrins as chiral selectors: estimation of the formation constant and mobility of the solute-cyclodextrin complexes. [Erratum to document cited in CA119(13):130804b]. Shibukawa, A.; Lloyd, D. K.; Wainer, I. W. (Dep. Oncol., McGill Univ., Montreal, PQ, H3G 1Y6, Can.). Chromatographia, 37(1-2), 113 (English) 1993. CODEN: CHRGB7. ISSN: 0009-5893.

REFERENCE 9: 119:130804 Simultaneous chiral separation of leucovorin and its

major metabolite 5-methyltetrahydrofolate by capillary electrophoresis using cyclodextrins as chiral selectors: estimation of the formation constant and mobility of the solute-cyclodextrin complexes. Shibukawa, A.; Lloyd, D. K.; Wainer, I. W. (Dep. Oncol., McGill Univ., Montreal, PQ, H3G 1Y6, Can.). Chromatographia, 35(7-8), 419-29 (English) 1993. CODEN: CHRGB7. ISSN: 0009-5893.

REFERENCE 10: 118:224956 Effect of folate diastereoisomers on the binding of 5-fluoro-2'-deoxyuridine-5'-monophosphate to thymidylate synthase. Van der Wilt, Clasina L.; Pinedo, Herbert M.; De Jong, Marion; Peters, Godefridus J. (Dep. Oncol., Free Univ. Hosp., Amsterdam, 1007 MB, Neth.). Biochem. Pharmacol., 45(5), 1177-9 (English) 1993. CODEN: BCPCA6. ISSN: 0006-2952.

L5 ANSWER 6 OF 11 REGISTRY COPYRIGHT 2000 ACS

RN 26560-38-3 REGISTRY

CN L-Glutamic acid, N-[4-[[2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt (1:1) (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Glutamic acid, N-[p-[[2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl)methyl]amino]benzoyl]-, calcium salt (1:1), L- (8CI)

OTHER NAMES:

CN Calcium N5-methyltetrahydrofolate

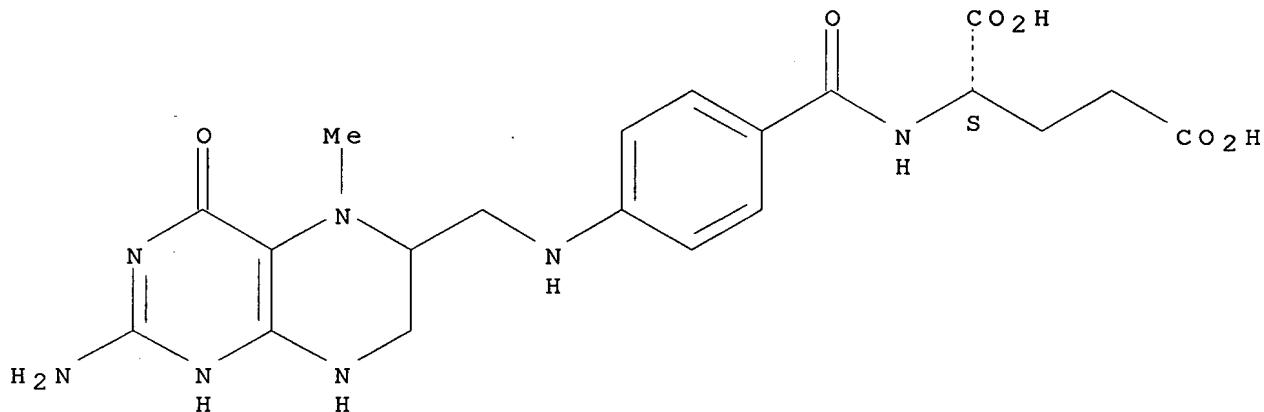
FS STEREOSEARCH

MF C20 H25 N7 O6 . Ca

LC STN Files: CA, CAPLUS, CSCHEM, TOXLINE, TOXLIT, USPATFULL

CRN (134-35-0)

Absolute stereochemistry.



● Ca

8 REFERENCES IN FILE CA (1967 TO DATE)  
 9 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 121:18023 Process for stabilizing folates. Cerna, Jitka; Pristoupilova, Kamila; Kodicek, Milan; Spundova, Marcela (Czech.).

Czech.

CS 276805 B6 19920812, 6 pp. (Czech). CODEN: CZXXA9. APPLICATION: CS 1990-2217 19900504.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CS 276805	B6	19920812	CS 1990-2217	19900504

REFERENCE 2: 120:288693 Process for the purification of crude alkaline earth

metal salts of N(5)-methyl-5,6,7,8-tetrahydrofolic acid and the uses of the purified salts. Attilio, Melera; Fabrizio, Marazza (SAPEC S.A. Fine Chemicals, Switz.). Eur. Pat. Appl. EP 539987 A2 19930505, 8 pp.

DESIGNATED STATES: R: CH, DE, ES, FR, GB, IT, LI. (German). CODEN: EPXXDW. APPLICATION: EP 1992-118513 19921029. PRIORITY: CH 1991-3153 19911029.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 539987	A2	19930505	EP 1992-118513	19921029
EP 539987	A3	19930825		
R: CH, DE, ES, FR, GB, IT, LI				
CH 682665	A	19931029	CH 1991-3153	19911029

REFERENCE 3: 119:270915 Preparation of N5-methyl- and -formyltetrahydrofolate

diastereomers. Vecchi, Giuseppe (APR Applied Pharma Research S. A., Switz.). Eur. Pat. Appl. EP 537842 A2 19930421, 5 pp. DESIGNATED STATES:

R:	AT, BE, DE, DK, ES, FR, GB, IT, NL	(English)	CODEN: EPXXDW.		
APPLICATION:	EP 1992-203089	19921007	PRIORITY: CH 1991-2986 19911010.		
PATENT NO.	KIND	DATE	APPLICATION NO. DATE		
PI	EP 537842	A2	19930421	EP 1992-203089	19921007
	EP 537842	A3	19930505		
	R: AT, BE, DE, DK, ES, FR, GB, IT, NL				
	CH 683261	A	19940215	CH 1991-2986	19911010
	US 5350850	A	19940927	US 1992-957176	19921007
	CA 2080178	AA	19930411	CA 1992-2080178	19921008

REFERENCE 4: 107:228572 Effects of 5-methyltetrahydrofolate on the activity of fluoropyrimidines against human leukemia (CCRF-CEM) cells. Mini, Enrico; Mazzei, Teresita; Coronello, Marcella; Criscuoli, Luciana; Gualtieri, Monica; Periti, Piero; Bertino, Joseph R. (Dip. Farmacol. Preclin. Clin., Univ. Firenze, Florence, 50134, Italy). Biochem. Pharmacol., 36(18), 2905-11 (English) 1987. CODEN: BCPCA6. ISSN: 0006-2952.

REFERENCE 5: 106:50632 Alkaline earth metal salts of 5-methyltetrahydrofolic acid. Conti, Josef; Mueller, Hans Rudolf (Eprova A.-G., Switz.). Patentschrift (Switz.) CH 649550 A 19850531, 4 pp. (German). CODEN: SWXXAS. APPLICATION: CH 1984-606 19840209.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	CH 649550	A	19850531	CH 1984-606	19840209

REFERENCE 6: 99:205503 Pharmacokinetics of 5-methyltetrahydrofolate in normal adults. Periti, P.; Ciuffi, M.; Coronello, M.; Mazzei, T.; Mini, E. (Inst. Pharmacol. Toxicol., Univ. Florence, Florence, Italy). Chemioterapia, 2(2), 83-7 (English) 1983. CODEN: CHEMEV.

REFERENCE 7: 95:98320 Process for the preparation of dl-5-methyltetrahydrofolic acid. Gennari, Federico (Bioresearch S.a.S., Italy). Brit. GB 1572138 19800723, 6 pp. Division of Brit. 1,572,137. (English). CODEN: BRXXAA. APPLICATION: GB 1978-12374 19770222.

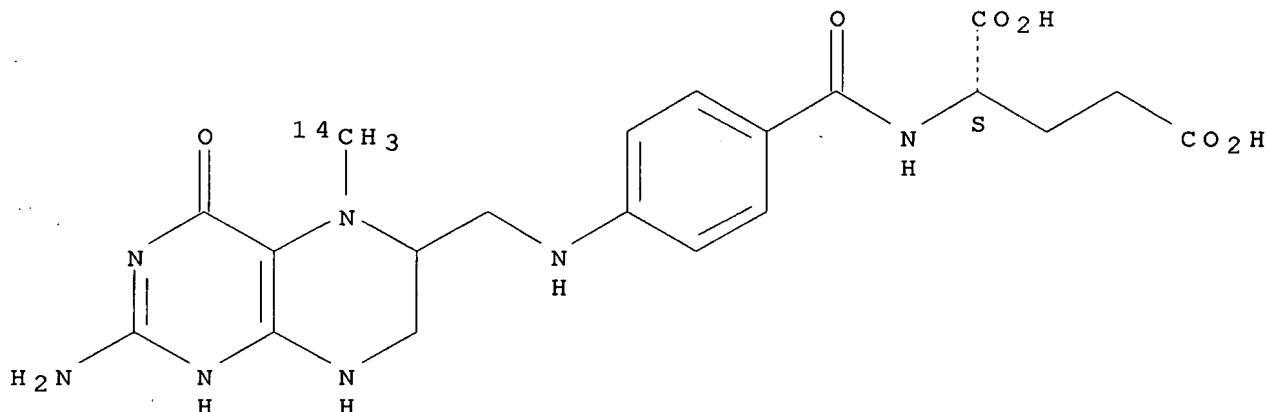
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PI	GB 1572138	A	19800723	GB 1978-12374	19770222

REFERENCE 8: 72:111795 Convenient method for the preparation of (+1)-5-methyltetrahydrofolic acid ((+1)-5-methyl-5,6,7,8-tetrahydropteroyl-L-monoglutamic acid). Blair, J. A.; Saunders, K. J. (Dep. Chem., Univ. Aston, Birmingham, Engl.). Anal. Biochem., 34(2), 376-81 (English) 1970. CODEN: ANBCA2.

L5 ANSWER 7 OF 11 REGISTRY COPYRIGHT 2000 ACS  
 RN 25630-71-1 REGISTRY  
 CN L-Glutamic acid, N-[4-[[[2-amino-1,4,5,6,7,8-hexahydro-5-(methyl-14C)-4-oxo-6-pteridinyl]methyl]amino]benzoyl]- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Glutamic acid, N-[p-[[2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-14C-6-pteridinyl]methyl]amino]benzoyl]-, L- (8CI)  
 OTHER NAMES:  
 CN 5-Methyl-14C-tetrahydrofolic acid  
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 MF C20 H25 N7 O6

LC STN Files: BEILSTEIN\*, CA, CAPLUS, TOXLIT  
(\*File contains numerically searchable property data)

Absolute stereochemistry.



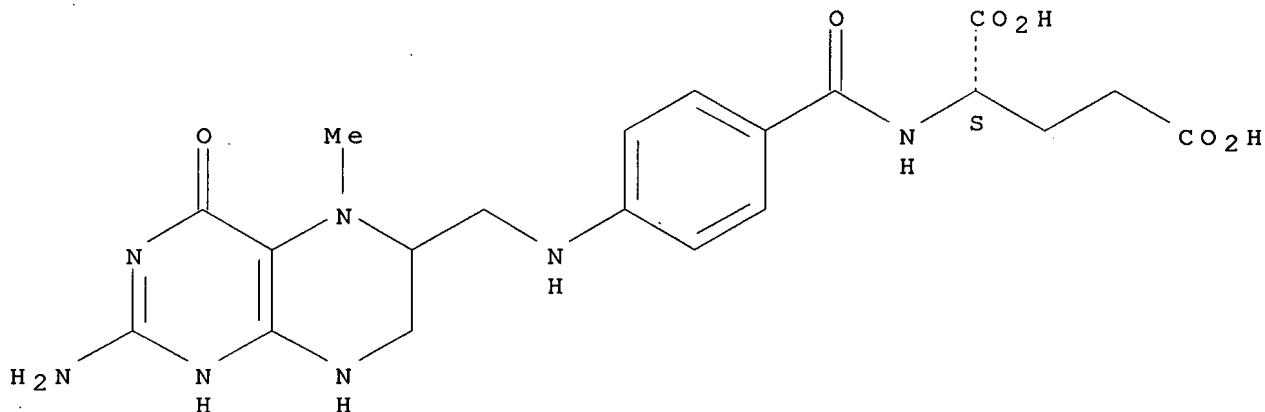
2 REFERENCES IN FILE CA (1967 TO DATE)  
2 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 93:109732 Enzymic preparations of radiolabeled  
+-L-5-methyltetrahydrofolate and +-L-formyltetrahydrofolate. Nixon, P.  
F.; Bertino, J. R. (Dep. Biochem., Univ. Queensland, St. Lucia, 4067,  
Australia). Methods Enzymol., 66(Vitam. Coenzymes, Pt. E), 547-53  
(English) 1980. CODEN: MENZAU. ISSN: 0076-6879.

REFERENCE 2: 75:58966 Enzymic preparations of radiolabeled  
(+)-L-5-methyltetrahydrofolate and (+)-L-5-formyltetrahydrofolate.  
Nixon,  
P. F.; Bertino, J. R. (Sch. Med., Yale Univ., New Haven, Conn., USA).  
Anal. Biochem., 43(1), 162-72 (English) 1971. CODEN: ANBCA2.

L5 ANSWER 8 OF 11 REGISTRY COPYRIGHT 2000 ACS  
RN 15997-98-5 REGISTRY  
CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-, barium salt (1:1) (9CI) (CA INDEX NAME)  
OTHER CA INDEX NAMES:  
CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl)methyl]amino]benzoyl]-, barium salt (1:1), L- (8CI)  
FS STEREOSEARCH  
DR 20392-92-1, 26560-37-2  
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LC STN Files: CA, CAPLUS  
CRN (134-35-0)

Absolute stereochemistry.



● Ba

3 REFERENCES IN FILE CA (1967 TO DATE)  
 3 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 106:50632 Alkaline earth metal salts of  
 5-methyltetrahydrofolic

acid. Conti, Josef; Mueller, Hans Rudolf (Eprova A.-G., Switz.).  
 Patentschrift (Switz.) CH 649550 A 19850531, 4 pp. (German). CODEN:  
 SWXXAS. APPLICATION: CH 1984-606 19840209.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CH 649550	A	19850531	CH 1984-606	19840209

REFERENCE 2: 95:98320 Process for the preparation of dl-5-methyltetrahydrofolic acid. Gennari, Federico (Bioresearch S.a.S., Italy). Brit. GB 1572138 19800723, 6 pp. Division of Brit. 1,572,137. (English). CODEN: BRXXAA. APPLICATION: GB 1978-12374 19770222.

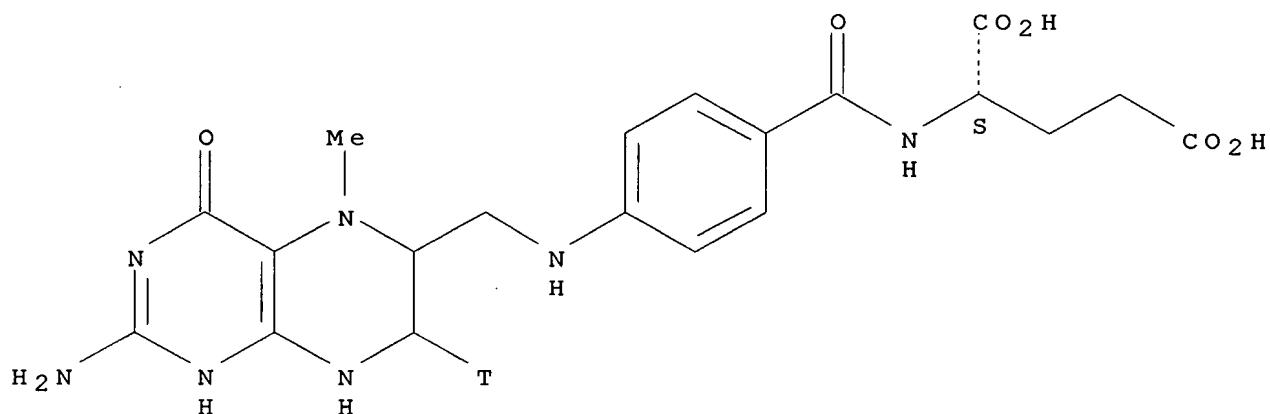
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI GB 1572138	A	19800723	GB 1978-12374	19770222

REFERENCE 3: 84:101195 On the mode of formation of tetrahydro-.beta.-carbolines. Rommelspacher, Hans; Coper, Helmut; Strauss, Sabine (Inst. Neuropsychopharmacol., Free Univ. Berlin, Berlin, Ger.). Life Sci., 18(1), 81-8 (English) 1976. CODEN: LIFSAK.

L5 ANSWER 9 OF 11 REGISTRY COPYRIGHT 2000 ACS  
 RN 7611-41-8 REGISTRY  
 CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl-7-t)methyl]amino]benzoyl]- (7CI, 8CI) (CA INDEX NAME)  
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MF C20 H24 N7 O6 T  
LC STN Files: CAOLD

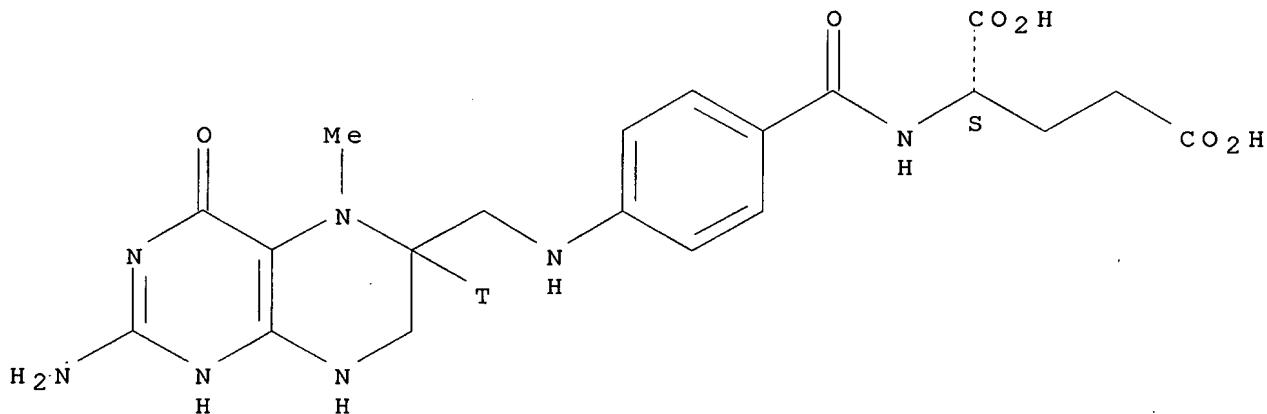
Absolute stereochemistry.



1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L5 ANSWER 10 OF 11 REGISTRY COPYRIGHT 2000 ACS  
RN 7611-40-7 REGISTRY  
CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-6-t-4-hydroxy-5-methyl-6-pteridinyl)methyl]amino]benzoyl]- (7CI, 8CI) (CA INDEX NAME)  
FS STEREOSEARCH  
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LC STN Files: CAOLD

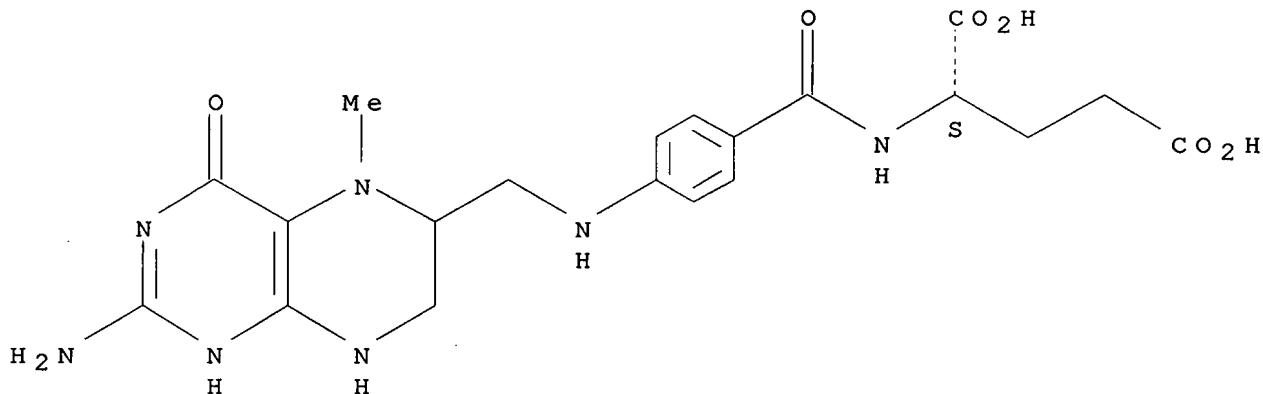
Absolute stereochemistry.



1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L5 ANSWER 11 OF 11 REGISTRY COPYRIGHT 2000 ACS  
 RN 134-35-0 REGISTRY  
 CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-5-methyl-4-oxo-6-pteridinyl)methyl]amino]benzoyl- (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
 CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl)methyl]amino]benzoyl- (6CI)  
 CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl)methyl]amino]benzoyl-, L- (8CI)  
 OTHER NAMES:  
 CN 5-Methyl-5,6,7,8-tetrahydrofolic acid  
 CN 5-Methyl-5,6,7,8-tetrahydropteroyl-L-glutamic acid  
 CN 5-Methyltetrahydrofolic acid  
 CN 5-Methyltetrahydropteroyl monoglutamate  
 CN 5-Methyltetrahydropteroylglutamic acid  
 CN N-Methyltetrahydrofolate  
 CN N-Methyltetrahydrofolic acid  
 CN N5-Methyltetrahydrofolate  
 CN N5-Methyltetrahydrofolic acid  
 CN N5-Methyltetrahydropteroylglutamate  
 CN Prefolic A  
 FS STEREOSEARCH  
 DR 3922-58-5, 76937-22-9  
 MF C20 H25 N7 O6  
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 BIOSIS,  
 BIOTECHNO, CA, CANCERLIT, CAOLD, CAPLUS, CIN, DDFU, DRUGU, EMBASE, IPA,  
 MEDLINE, NIOSHTIC, PROMT, TOXLINE, TOXLIT, USPATFULL, VETU  
 (\*File contains numerically searchable property data)

Absolute stereochemistry.



961 REFERENCES IN FILE CA (1967 TO DATE)  
 18 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA  
 963 REFERENCES IN FILE CAPLUS (1967 TO DATE)  
 16 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 133:278144 High-performance liquid chromatographic assay for the determination of 5-methyltetrahydrofolate in human plasma. Chladek, J.; Sispera, L.; Martinkova, J. (Simkova 870, Faculty of Medicine, Department of Pharmacology, Charles University, Hradec Kralove, Czech Rep.). J. Chromatogr., B: Biomed. Sci. Appl., 744(2), 307-313 (English) 2000. CODEN: JCBBEP. ISSN: 0378-4347. Publisher: Elsevier Science

B.V..

REFERENCE 2: 133:264354 Contrasting effects of oncogene expression on two carrier-mediated systems internalizing folate compounds in fisher rat 3T3 cells. Kuhnel, Jean-Marc; Chiao, Judy H.; Sirotnak, F. M. (Program of Molecular Pharmacology and Experimental Therapeutics, Memorial Sloan-Kettering Cancer Center, New York, NY, 10021, USA). J. Cell. Physiol., 184(3), 364-372 (English) 2000. CODEN: JCLLAX. ISSN: 0021-9541. Publisher: Wiley-Liss, Inc..

REFERENCE 3: 133:256805 Combinations of fibrates with B vitamins for reduction of homocysteine levels. Dierkes, Jutta; Luley, Claus; Westphal, Sabine (Dierkes, Jutta, Germany; Luley, Claus, Prof.Dr.; Westphal, Sabine,). Ger. Offen. DE 19910682 A1 20000921, 4 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1999-19910682 19990310.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19910682	A1	20000921	DE 1999-19910682 19990310

REFERENCE 4: 133:202550 Impact of the simultaneous administration of the (+)- and (-)-forms of formyl-tetrahydrofolic acid on plasma and intracellular pharmacokinetics of (-)-tetrahydrofolic acid. Schleyer, Eberhard; Rudolph, Karl Lenhard; Braess, Jan; Unterhalt, Michael; Ehninger, Gerhard; Hiddemann, Wolfgang; Kern, Wolfgang (Department of Internal Medicine I, Carl-Gustav-Carus-University, Dresden, Germany). Cancer Chemother. Pharmacol., 45(2), 165-171 (English) 2000. CODEN: CCPHDZ. ISSN: 0344-5704. Publisher: Springer-Verlag.

REFERENCE 5: 133:175691 Altered folate metabolism and disposition in mothers

affected by a spina bifida pregnancy: influence of 677 c.fwdarw.t methylenetetrahydrofolate reductase and 2756 a.fwdarw.g methionine synthase genotypes. Lucock, Mark; Daskalakis, Ioannis; Briggs, David; Yates, Zoe; Levene, Malcolm (Research School of Medicine, Centre for Production, Growth and Development, Division of Paediatrics and Child Health, University of Leeds, Leeds General Infirmary, Leeds, West Yorkshire, LS2 9NS, UK). Mol. Genet. Metab., 70(1), 27-44 (English) 2000.

CODEN: MGMEFF. ISSN: 1096-7192. Publisher: Academic Press.

REFERENCE 6: 133:174116 Analysis of folate form distribution by affinity followed by reversed-phase chromatography with electrochemical detection. Bagley, Pamela J.; Selhub, Jacob (Vitamin Metabolism Laboratory, Jean Mayer Human Nutrition Research Center on Aging at Tufts University, US Department of Agriculture, Boston, MA, 02111, USA). Clin. Chem. (Washington, D. C.), 46(3), 404-411 (English) 2000. CODEN: CLCHAU.

ISSN: 0009-9147. Publisher: American Association for Clinical Chemistry.

REFERENCE 7: 133:172014 Folic acid reverts dysfunction of endothelial nitric

oxide synthase. Stroes, E. S. G.; Van Faassen, E. E.; Yo, M.; Martasek, P.; Boer, P.; Govers, R.; Rabelink, T. J. (Department of Vascular Medicine, University Hospital Utrecht, Utrecht, 3584, Neth.). Circ. Res., 86(11), 1129-1134 (English) 2000. CODEN: CIRUAL. ISSN: 0009-7330. Publisher: Lippincott Williams & Wilkins.

REFERENCE 8: 133:146068 Trichloroethylene induced vitamin B12 and folate deficiency leads to increased formic acid excretion in the rat. Dow, J. L.; Green, T. (Zeneca, Central Toxicology Laboratory, Macclesfield, Cheshire, UK). Toxicology, 146(2-3), 123-136 (English) 2000. CODEN: TXCYAC. ISSN: 0300-483X. Publisher: Elsevier Science Ireland Ltd..

REFERENCE 9: 133:115062 Trans-stimulation effects of folic acid derivatives on methotrexate transport by rat renal organic anion transporter, OAT-K1. Takeuchi, Ayako; Masuda, Satohiro; Saito, Hideyuki; Hashimoto, Yukiya; Inui, Ken-Ichi (Department of Pharmacy, Kyoto University Hospital, Faculty

of Medicine, Kyoto University, Kyoto, Japan). J. Pharmacol. Exp. Ther., 293(3), 1034-1039 (English) 2000. CODEN: JPETAB. ISSN: 0022-3565. Publisher: American Society for Pharmacology and Experimental Therapeutics.

REFERENCE 10: 133:99302 Controlled comparison of L-5-methyltetrahydrofolate versus folic acid for the treatment of hyperhomocysteinemia in hemodialysis patients. Boston, Andrew G.; Shemin, Douglas; Bagley, Pamela; Massy, Ziad A.; Zanabli, Abdul; Christopher, Kenneth; Spiegel, Paul; Jacques, Paul F.; Dworkin, Lance; Selhub, Jacob (Division of General

Internal Medicine, Memorial Hospital of Rhode Island, Pawtucket, RI, 02860, USA). Circulation, 101(24), 2829-2832 (English) 2000. CODEN: CIRCAZ. ISSN: 0009-7322. Publisher: Lippincott Williams & Wilkins.

EP 539987 A3 19930825  
 R: CH, DE, ES, FR, GB, IT, LI  
 CH 682665 A 19931029 CH 1991-3153 19911029

REFERENCE 3: 119:270915 Preparation of N5-methyl- and -formyltetrahydrofolate diastereomers. Vecchi, Giuseppe (APR Applied Pharma Research S. A., Switz.). Eur. Pat. Appl. EP 537842 A2 19930421, 5 pp. DESIGNATED STATES:

R: AT, BE, DE, DK, ES, FR, GB, IT, NL. (English). CODEN: EPXXDW.  
 APPLICATION: EP 1992-203089 19921007. PRIORITY: CH 1991-2986 19911010.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 537842	A2	19930421	EP 1992-203089	19921007
EP 537842	A3	19930505		
R: AT, BE, DE, DK, ES, FR, GB, IT, NL CH 683261 US 53950850 CA 2080178	A	19940215	CH 1991-2986	19911010
	A	19940927	US 1992-957176	19921007
	AA	19930411	CA 1992-2080178	19921008

REFERENCE 4: 107:228572 Effects of 5-methyltetrahydrofolate on the activity of fluoropyrimidines against human leukemia (CCRF-CEM) cells. Mini, Enrico; Mazzei, Teresita; Coronello, Marcella; Criscuoli, Luciana; Gualtieri, Monica; Periti, Piero; Bertino, Joseph R. (Dip. Farmacol. Preclin. Clin., Univ. Firenze, Florence, 50134, Italy). Biochem. Pharmacol., 36(18), 2905-11 (English) 1987. CODEN: BCPCA6. ISSN: 0006-2952.

REFERENCE 5: 106:50632 Alkaline earth metal salts of 5-methyltetrahydrofolic acid. Conti, Josef; Mueller, Hans Rudolf (Eprova A.-G., Switz.). Patentschrift (Switz.) CH 649550 A 19850531, 4 pp. (German). CODEN: SWXXAS. APPLICATION: CH 1984-606 19840209.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CH 649550	A	19850531	CH 1984-606	19840209

REFERENCE 6: 99:205503 Pharmacokinetics of 5-methyltetrahydrofolate in normal adults. Periti, P.; Ciuffi, M.; Coronello, M.; Mazzei, T.; Mini, E. (Inst. Pharmacol. Toxicol., Univ. Florence, Florence, Italy). Chemoterapia, 2(2), 83-7 (English) 1983. CODEN: CHEMEV.

REFERENCE 7: 95:98320 Process for the preparation of dl-5-methyltetrahydrofolic acid. Gennari, Federico (Bioresearch S.a.S., Italy). Brit. GB 1572138 19800723, 6 pp. Division of Brit. 1,572,137. (English). CODEN: BRXXAA. APPLICATION: GB 1978-12374 19770222.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI GB 1572138	A	19800723	GB 1978-12374	19770222

REFERENCE 8: 72:111795 Convenient method for the preparation of (+1)-5-methyltetrahydrofolic acid ((+1)-5-methyl-5,6,7,8-tetrahydropteroyl-L-monoglutamic acid). Blair, J. A.; Saunders, K. J. (Dep. Chem., Univ. Aston, Birmingham, Engl.). Anal. Biochem., 34(2), 376-81 (English) 1970. CODEN: ANBCA2.

=> d 15 1-11 ide cbib pi

RN 34418-06-9 REGISTRY

CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl)methyl-t]amino]benzoyl-2,6-t2]-, L- (8CI) (CA INDEX NAME)

OTHER NAMES:

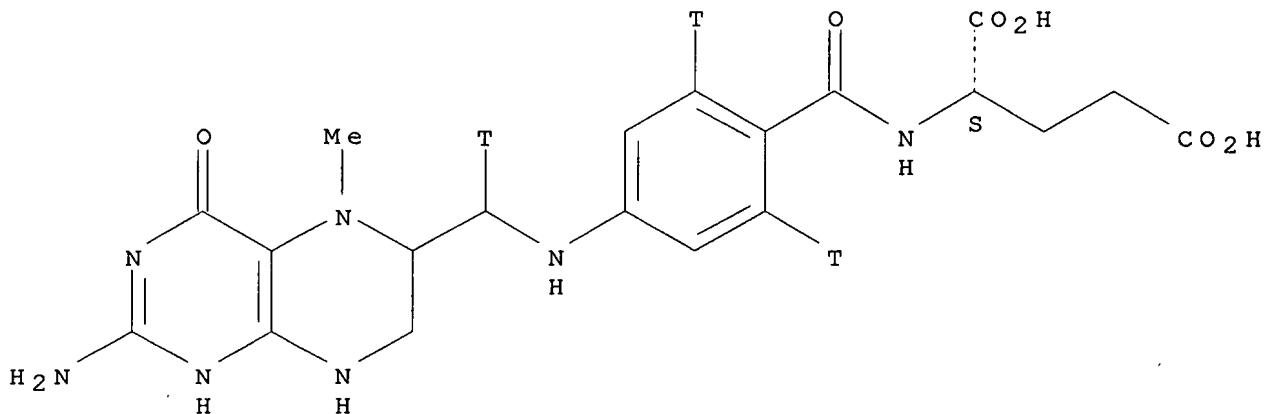
CN 5-Methyltetrahydrofolic acid-9,3',5'-3H

FS STEREOSEARCH

MF C20 H22 N7 96 T3

LC STN Files: CA, CAPLUS

## Absolute stereochemistry.



1 REFERENCES IN FILE CA (1967 TO DATE)

## 1 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 75:58966 Enzymic preparations of radiolabeled (+)-L-5-methyltetrahydrofolate and (+)-L-5-formyltetrahydrofolate.

Nixon,

P. F.; Bertino, J. R. (Sch. Med., Yale Univ., New Haven, Conn., USA). Anal. Biochem., 43(1), 162-72 (English) 1971. CODEN: ANBCA2.

L5 ANSWER 2 OF 11 REGISTRY COPYRIGHT 2000 ACS

RN 33140-04-4 REGISTRY

CN L-Glutamic acid, N-[4-[(2-amino-1,4,5,6,7,8-hexahydro-4-oxo-6-pteridinyl)methyl]amino]benzoyl-, compd. with L-ornithine (1:2) (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Glutamic acid, N-[p-[(2-amino-5,6,7,8-tetrahydro-4-hydroxy-5-methyl-6-pteridinyl)methyl]amino]benzoyl]-, L-, compd. with L-ornithine (1:2) (8CI)

CN L-Ornithine, N-[4-[[[(2-amino-1,4,5,6,7,8-hexahydro-4-oxo-6-pteridinyl)methyl]amino]benzoyl]-L-glutamate (2:1) (9CI)

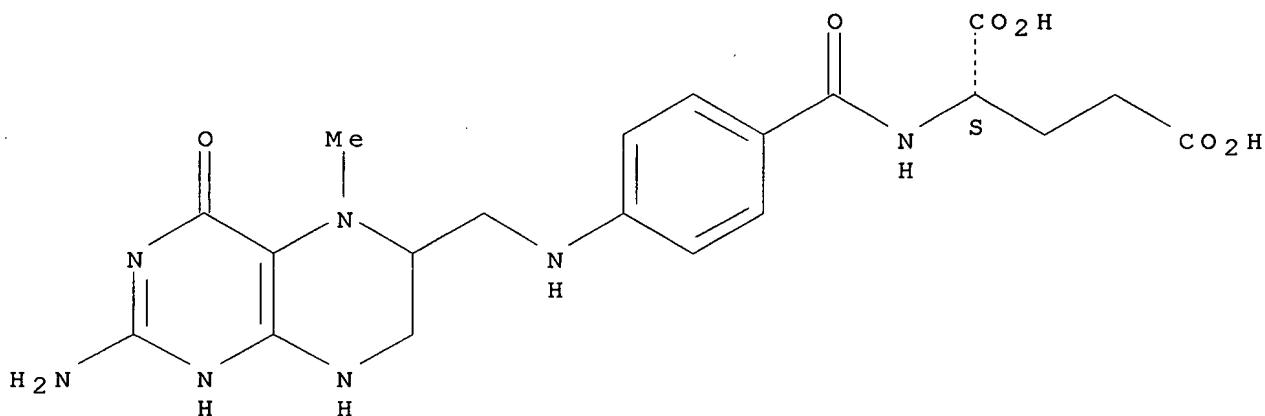
FS STEREOSEARCH

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LC STN Files: CA, CAPLUS

LC STN Files: CA, CAPLUS, CSCHEM, TOXLINE, TOXLIT, USPATFULL  
CRN (134-35-0)

Absolute stereochemistry.



● Ca

8 REFERENCES IN FILE CA (1967 TO DATE)  
9 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 121:18023 Process for stabilizing folates. Cerna, Jitka; Pristoupilova, Kamila; Kodicek, Milan; Spundova, Marcela (Czech.). Czech.

CS 276805 B6 19920812, 6 pp. (Czech). CODEN: CZXXA9. APPLICATION: CS 1990-2217 19900504.

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI <del>CS 276805</del>	B6	19920812	CS 1990-2217	19900504

REFERENCE 2: 120:288693 Process for the purification of crude alkaline earth

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